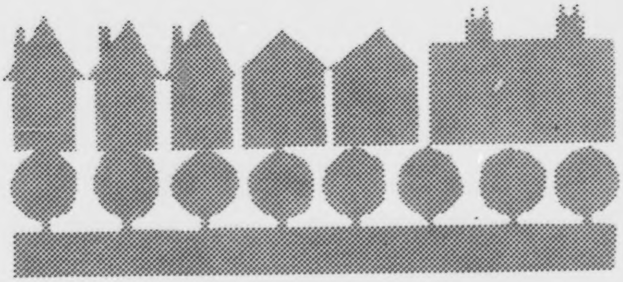
HOUSING NEEDS : AN APPRAISAL
1981 ~ 2001

Background Report Number One:

Forecast of Household Growth



REGIONAL DEPARTMENT OF PLANNING & DEVELOPMENT
BILL THOMSON, Commisioner.

August 1982

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PREFACE

BACKGROUND

In March 1981 Regional Council approved the undertaking of a study to update the 1975 Regional housing study - Housing: a program for action. The purpose of the present study is to assess housing demands and needs in the Region of Waterloo in light of changes in economic activity, population growth rates and government programs. The study was funded by a Municipal Housing Statement Update grant from the Ministry of Municipal Affairs and Housing.

NEED FOR A HOUSING STATEMENT UPDATE

In 1975, the 1981 population forecast of the Region of Waterloo was 337,500 people (low forecast). This forecast assumed that net migration into the Region of Waterloo between 1976 and 1981 would be 20,000 people. This assumption was based on an estimated net migration figure of just over 20,000 people between 1971 and 1976. In actual fact net migration into the Region of Waterloo between 1976 and 1981 was only 5,000 people. This lower than anticipated net migration figure accounts almost entirely for the unexpected decline in population growth of the Region of Waterloo to 307,535 people in 1981. The effect of a lower population growth rate on household formation has been a significant decline in the growth of the number of new households in the Region of Waterloo between 1976 and 1981.

In addition to population changes, unforeseen changes in several other areas have greatly affected the housing market in this Region since 1975. The Ontario and Regional economies are experiencing less economic growth than was anticipated. In addition, high mortgage rates have affected the purchase of ownership units as well as the construction of rental units. Rent controls have contributed to uncertainty in the rental market, and a drop in rental construction. And federal and provincial housing programs have undergone significant change, with an emphasis now being placed on energy conservation.

In addition to the above, in the Regional response to the 1980 "Annual Housing Review" conducted by the Province, several members of the Regional Planning and Development Committee raised the concern that the need for assisted housing was being underestimated by the local housing authorities.

STUDY ORGANIZATION

This study was undertaken by the Regional Department of Planning and Development with the assistance of a Housing Study Technical Advisory Committee. This Committee was composed of representatives from senior levels of government, the Area Municipalities, the building industry, lending institutions, Regional Departments and other agencies. The Technical Advisory Committee provided assistance in establishing housing issues and reviewing this report. The Committee was extremely valuable throughout this study and their efforts are very much appreciated.

There was general support from members of the Technical Advisory Committee for the recommendations contained in this report. The diversity of the interest of members of the Technical Advisory Committee would not permit a common position on some recommendations, such as rent controls. Nevertheless, many of their concerns have been taken into account in this study.

HOW THE REPORT IS TO BE USED

This report provides a comprehensive picutre of the implications of changing population, economic, social and public policy trends for the housing sector within Waterloo Region. It therefore exposes some of the issues to be considered by public decision-makers and private investors in responding to these trends. However, the estimates of future requirements are intended as guidelines and are not intended to be firm commitments which delivery agencies are required to assume. Similarly the recommendations for action indicate the most informed response which should be considered in overcoming the problems identified in this study. Consequently, as conditions change there must be a continuing commitment to monitor these changes, to re-interpret their effects and to adjust policies.

A Region-wide study such as this provides a consistent framework for individual action by Area Municipalities. Having agreed on an acceptable methodology, and on the basis of future action on a Regional scale, municipal programs can be developed more quickly and with greater co-ordination.

REGIONAL HOUSING STUDY : AN APPRAISAL

1981-2001

BACKGROUND PAPER Nº 1 : FORECAST OF HOUSEHOLD GROWTH

1. INTRODUCTION

This report contains a forecast of household growth in the Region of Waterloo from 1981 to 2001. It also looks at supply issues which may place constraints on meeting this forecast. This report is part of three background papers prepared for the Regional Housing Study. Background Paper #2 examines special housing needs and Background Paper #3 looks at housing policy issues. These papers form the basis for the Summary and Recommendation Report.

In this paper a detailed discussion is provided of factors influencing household formation and tenure choice. Both social and economic factors are examined. Economic factors influencing household formation are identified as interest rates, unemployment, real income, inflation, energy cost, housing programs and economic uncertainty. Social factors include social preferences, public attitudes, and changes in marital status. Population changes are also an important factor influencing household growth and tenure choice. The age structure of the Region's population and growth of that population will greatly influence housing demand.

Housing supply constraints can also influence household growth and tenure choice. A shortage of rental units for example could result in younger families postponing household formation and an increased demand for ownership units.

For explanations of many of the terms used in this report see the glossary of terms contained at the back of this report.

2. FORECASTING METHODOLOGY

An estimate of households in this Region for any select year between now and 2001 requires both a forecast of population and a forecast of percentage probability of household formation. The forecast of population used in this study was established in a 1980 Regional Planning and Development report entitled: "2001 Regional Population Forecast". Regional Council reaffirmed this forecast in October 1981. This forecast, including age distribution by select age cohorts, is shown on Table 3 of this report and is discussed in greater detail in Appendix A. In addition to this population forecast, which assumes a net migration figure of 12,000 people for the Region of Waterloo between 1981 and 1986, an alternative population forecast is introduced which assumes a net migration figure of 5,000 people between 1981 and 1986. Recent trends in population growth indicate that this forecast is more likely to occur.

The forecast of percentage probability of household formation is developed in this part of the Study by looking at both social and economic factors which influence household formation decisions. From this forecast, the number of households can then be estimated by taking the probability that any person in an age group will form a household and applying that estimate to the population in that age group. This produces the number of households formed from that age group. By adding the households formed from each age group, we can then estimate the total households which will be formed in the Region given the selected population forecast and forecast of percentage probability of household formation.

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3. FACTORS INFLUENCING PERCENTAGE PROBABILITY OF HOUSEHOLD FORMATION

The 'life cycle' of an individual or family as it relates to housing is comprised of a series of decisions. The first decision is whether to form a separate household. This is followed by a decision to own or rent. Most individuals or families choosing to create a household rent initially, which in most cases is followed by a decision of when and what type of dwelling unit to own. Often these individuals or families will in time move from one ownership unit to a larger ownership unit as household size and economic well being increases.

The decisions of individuals or families regarding household formation and tenure are influenced greatly by social factors as well as economic factors. Social factors include the increasing tendency of families to maintain their own separate household, the increasing tendency for unmarried individuals, both young and old, to maintain their own household and society's changing attitudes towards marriage. Economic influences include the effect that changes in income, unemployment, economic uncertainty, the price of housing (including carrying charges), energy costs and subsidy programs by governments influence household formation. It has been found that in good economic times (eg, high incomes, low unemployment) household formation generally increases. The reverse is true as economic times worsen. The effect that both social factors and economic factors had on percentage probability of household formation between 1961 and 1980 is examined below.

i) Percentage Probability of Household Formation 1961-1980

Table 1 shows trends in percentage probability of household formation for the Region of Waterloo from 1961 to 1980. Percentage probability of household formation from 1961 to 1976 is calculated for select age groups from Census population

TABLE 1

PERCENTAGE PROBABILITY OF HOUSEHOLD FORMATION

REGION OF WATERLOO

1961-1980

Age of Head of Household	Percentage of Population Who are Heads of Household				
	1961* %	1966* %	1971* %	1976* %	1980** %
15 - 24	7.6	10.4	13.9	17.4	15.7
25 - 34	41.4	44.8	46.9	48.9	49.8
35 - 44	46.2	48.2	50.5	53.3	54.5
45 - 54 ***	50.7	52.0	51.4	52.9	45-59 54.7
55 - 64 ***	54.2	55.0	55.2	56.3	60-64 57.5
Over 65	54.8	53.9	56.8	59.2	59.8

* Source Census

** Source, 1980 Regional Assessment Data.

*** The groupings obtained from Regional Assessment data differed from Census groupings for these two age groups. Regional Assessment groupings are from 45-59 and from 60-64.

and Census households for this Region. The 1980 calculation is based on Regional Assessment data on population and households.* Several conclusions can be drawn from this Table.

- the percentage probability of household formation increased for all age groups between 1961 and 1980, except for the age group 15-24 which experienced a decline in percentage probability of household formation between 1976 and 1980 as economic times worsened.
- the largest increases in percent probability of household formation has occurred in age groups less than 45 years of age. The age group from 15-24 increased its probability of household formation rapidly to 1976, but experienced a decline in this percentage from 1976-1980. The age groups 25-34 and 35-44 increased their probability of household formation at an almost constant rate between 1961 and 1976, but this rate of increase decreased between 1976 and 1980 as economic times worsened.
- although the age groups between 45-64 experienced less of an increase in percentage probability of household formation than other age groups between 1961 and 1980, their rate of increase was generally constant, even between 1976 and 1980 when the rate of increase for other age groups declined. This seems to indicate that this group was not as affected by our worsening economic situation.

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* The 1981 Regional Assessment Data is available but does not provide a complete assessment of the Region. For this reason population and household figures from this assessment could not be used in this Report.

- the age group over 65 years of age experienced an almost constant rate of increase in percentage probability of household formation from 1966 to 1976. This rate of increase slowed down however, between 1976 and 1980 as economic times worsened.

Behind these trends in percentage probability of household formation are both social and economic factors. These are now examined.

ii) Social Factors

Several social factors have influenced the general increase in percentage probability of household formation in this Region experienced by all age groups between 1961 and 1980. Foremost amongst these factors is a general increase in the desire of individuals and families for private accommodation and independence. This has been a major factor contributing to the rise in percentage probability of household formation amongst young people and to the "undoubling of families" and "non-families" who formerly shared one household. Indirectly this goal may also have contributed to a rise in the percentage probability of household formation amongst people in the age category 65 years of age and over. The children of the age group 65 years and over in many instances have choosen to maintain their own housing unit without parents. As a result, there are now two households where there was previously one.

For younger age groups (ie, 15-24 and 25-34) the desire for independence and their own private accommodation was facilitated by a general rise in real incomes (income increase minus the rate of inflation) between 1961 and 1976. This enabled young single persons to form their own household or share this household with people in the same age group. However, since 1978, real incomes have consistently fallen as shown on Table 4. This fall in real incomes has in turn, corresponded to a decline in percentage probability of household formation for the age group 15-24 and to a slowdown in the rate of increase for the age group 25-34.

Real incomes were not the only factor which contributed to the general rise in percentage probability of household formation for younger age groups between 1961 and 1976. During this period, there was also a change in the supply of housing which made affordable, easy to maintain housing available for young people. Also, there was a qualitative change in housing being occupied by young people. They were no longer choosing to live in rooming houses where they were not considered to be a household, but were choosing to occupy their own private dwelling unit. More specifically in this Region, there was a rise in university and college enrolment between 1971 and 1976.* However, since 1976 enrolment at these institutions in the Region has been fairly constant. This has corresponded with a decline in the percentage probability of household formation in the age group 15-24 in this period.

The undoubling of families has been an important factor influencing the growth of households in this Region. In 1961, 7.0% of all households in this Region were comprised of more than one family. By 1976, only 1.6% of all households in this Region had more than one family living in the same dwelling unit. This undoubling of families accounted for the creation of almost 4,000 households, or approximately 10% of the households created in this Region between 1961 and 1976. This ability of families to fulfill their desire for private accommodation and independence between 1961 and 1976 corresponded to a period where real incomes were generally rising and unemployment was at low levels. Since

* Students who live in off-campus housing either in their own separate unit or sharing it with other students, are viewed as forming their own household.

1976, however, unemployment has generally increased and real incomes, since 1978 have fallen. Because of these factors, in the period between 1976 and 1980 a reversal of the trend established between 1961 and 1976 for families to undouble has probably occurred. However, the goal of privacy and independence is still strong amongst families and we should not expect a substantial increase in the percentage of families doubling up. We have made this assumption in this report.

Amongst non-families, undoubling has also had important consequences for household formation. In 1961, 33.2% of all non-family households had two or more people in them. By 1976 this figure had fallen to 22.8%. This undoubling of non-families accounted for an increase of approximately 2,000 households, or approximately 5.0% of the households created in this Region between 1961 and 1976. The factors behind the undoubling of non-families between 1961 and 1976 are the same as given for families. With real incomes beginning to fall in 1978 and unemployment rising since 1976, a reversal of this trend towards undoubling has probably occurred between 1976 and 1980. Judging by the percentage of non-families sharing accommodation (22.8% in 1976) it appears that this group has less attachment to the goal of privacy than families. Therefore, as real incomes fall and unemployment rises we can expect the proportion of non-families doubling-up to increase. This would tend to reduce the percentage probability for household formation, primarily amongst younger age groups. This assumption has been made in the report.

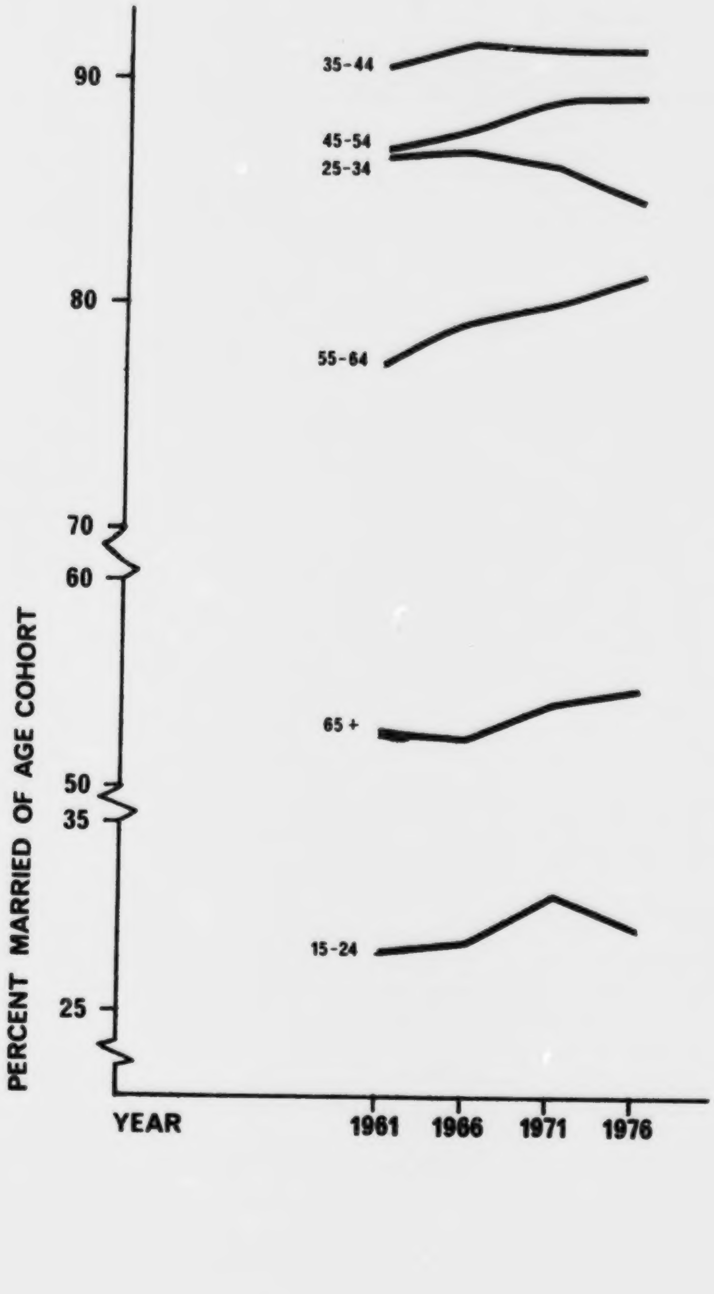
An increasing tendency for seniors to remain in their own homes has resulted in an increase in the probability of household formation for the age group over 65 years. This trend is the result of several factors. Governments have encouraged seniors through economic and social programs to remain in their own homes rather than enter institutions. Income support programs in addition to government pensions, including municipal and provincial tax credits have assisted seniors. Seniors can also take advantage of negative mortgages which provide them with a monthly income through the value of their home. Also changing lifestyles and mobility of their children has resulted in fewer seniors moving in with family members. The trend of increased household formation of seniors in the community will probably continue provided income support and support service programs are available to meet seniors' needs. This assumption has been made in this report.

In addition to the influence that an increased desire for privacy and independence has had on the percentage probability of household formation in this Region, changes in society's attitudes towards marriage has also increased household formation. For the Region as well as Ontario as a whole, there has been a general decline in marriages for age groups under 35 years of age. From 1961 to 1976, the percentage of the population over 15 that was married in the Region, declined from 70.7% to 67.6%. Although 1980 figures are not available it is expected that this trend continued between 1976 and 1980. This decrease in the percentage of the population not married can be attributed to a general rise in the percentage of single people over 15 who have never been married and to a general rise in the percentage of divorced and separated people over 15 years of age.

In 1961, approximately 22% of the Region's population over 15 years of age was categorized in the marital status "single and never married". By 1976, this percentage had risen to 25.1% and it is probable that it continued to rise, although at a decreasing rate, to 1980. This increase in the percentage of the population "single but never married" is totally attributable to a decline in the marriage rate for the age group less than 35 years of age. Several factors have contributed to this increase including increased job opportunities and rising income levels for women; changes in society's attitudes towards

FIGURE 1

PERCENT MARRIED BY AGE COHORTS;
KITCHENER C.M.A., 1961 - 1976



common-law marriages; and an increasing tendency to postpone family formation until economic well being is achieved. The overall effect of this rise in the percentage of the Region's population over 15 who are categorized as "single and never married" was to increase the growth in households in the Region between 1961 and 1980.

The number of people categorized as divorced in the Census since 1961, has increased in the Region from .6% of the population over 15 years of age in 1961 to 1.7% in 1976. This percentage excludes separated people, which the Census categorizes as married. It is assumed that the percentage of the Region's population categorized as divorced or separated continued to increase between 1976 and 1980. Several factors are thought to contribute to increased divorce and separation rates. These include more liberal attitudes towards divorce and separation and alternative living arrangements, a higher incidence of marriages in teens, and the fact that many younger families postpone having children which makes divorce and separation less difficult. The net effect of an increase in divorces and separations for the general population over 15 years, has been an increase in percentage probability of household formation between 1961 and 1980. This change in marital status has primarily affected the age group between 25 and 34, although there has been a marked increase in divorces and separations in the ages 20-49 years.

In summary then, the social factors which have increased the percentage probability of household formation in this Region between 1961 and 1980 and which are expected to influence household formation in the future include:

- an increased desire on the part of young people to form their own household. This trend is expected to continue, economic factors permitting.
- an increased incidence amongst widowed and divorced seniors to maintain a separate household. This trend is

expected to continue provided income support programs and support services are maintained.

- the undoubling of non-families is expected to continue, provided economic circumstances permit. In poor economic times it is expected that there will be an increase in non-families doubling up, which will result in a reduction of household formation.
- by 1976, less than 2% of the families in the Region shared a household. The undoubling of families is not expected to contribute in the future to an increase in households. In poor economic times it is expected that there will be an increase in families doubling up, which will result in a reduction of household formation.
- changes in marital status have resulted from an increase in separated and divorced people in age groups between 20-49 years and an increase in the percentage of single, never married people in the age groups over 15 years of age. Both trends are expected to continue.

iii) Economic Factors

To this point social factors have been presented as the explanation for the increase in percentage probability of household formation in this Region between 1961 and 1980. It is important to note that these social factors were able to materialize in this period because of a favourable economic climate. Up until 1978, real incomes (incomes minus inflation) had generally increased (See Table 4). Unemployment had generally remained at low levels until 1974 when it began to rise steadily until 1978 where it has remained at a relatively high level since. In the period from 1976 to 1980, when the economy was gradually worsening, a decline in the percentage probability of household formation has been noted for the age group 15-24 years of age, as shown on Table 1. It has also been noted that for the age groups between 25 and 44 and over 65 years of age that the percentage probability of household formation increased between 1976 and 1980 but at a decreasing rate for these age groups. This appears to establish a relationship between changes in percentage probability of household formation and economic factors.

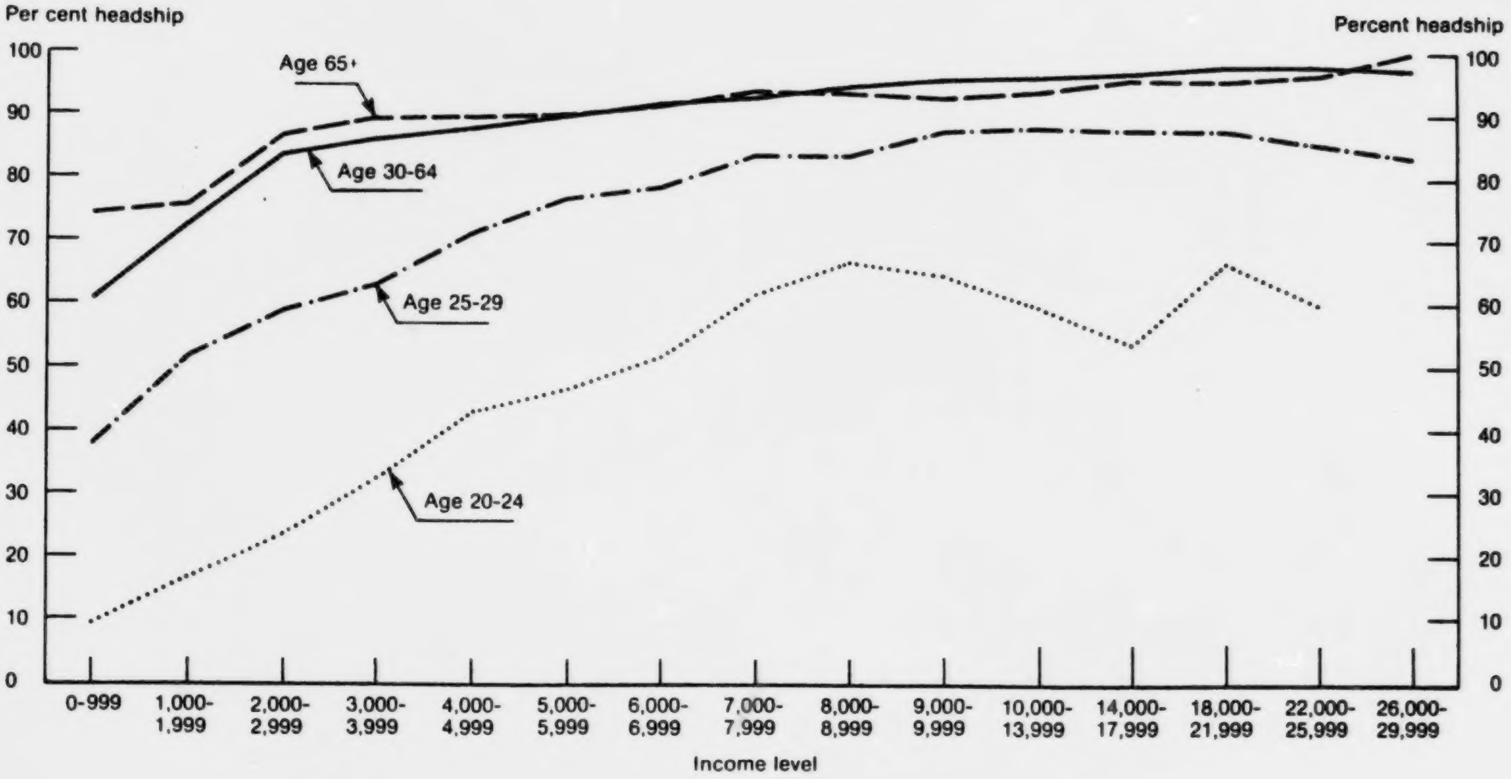
In a 1979 study by Statistics Canada, The Demand for Housing in Canada, the impact of income and unemployment on the percentage probability of household formation was examined. The study makes use of 1971 Census income data and its effect on percentage probability of household formation. It is regretable that the 1971 Census provides the most recent source of information which relates incomes to percentage probability of household formation. However, it is not unrealistic to expect that conclusions arrived at in this study are still valid. The relationship of income and demand for consumer durables, such as housing, does not break down as real incomes rise. Consumers will usually use some of this rise in real income to demand more housing, ie, a larger dwelling unit. Others will now be able to afford to form their own household, thus, a general increase in percentage probability of household formation.

Figure 2 shows a comparison of income to percentage probability of household formation for select age groups. This graph shows that as real income rises the percentage probability of household formation increases for all age groups. The rate of increase is most dramatic for age groups 20-24 and 25-29 years of age at low income levels. As income rises, the effect that income has on percentage probability of household formation decreases. As shown on Table 4, real incomes rose in Canada until 1978. This corresponded to a general increase in probability of household formation, as this graph predicts.

It has already been noted that society in general has increased its preference for privacy and independence. That is, they are willing to spend more of their real income for housing. This has likely resulted in a shift upwards of all of the curves shown on Figure 2. The shift of these curves

FIGURE 2

Headship Rate for Males, by Age and 1970 Income, Canada



Source: 1971 Census of Canada, Public Use Sample Tapes.

:Statistics Canada, The Demand for Housing in Canada, Page 90 would be more pronounced for the age groups less than 35 years of age and over 65 years of age, since it has already been noted that the preference for privacy and independence has affected these groups the most. What the upwards shift of these curves means then, is that percentage probability of household formation is now higher due to social factors. The relationship between real income and probability of household formation still holds, despite this shift. The fact that real incomes have risen in total by approximately 10% between 1971 and 1981, would then also explain a general increase in percentage probability of household formation in this Region.

The conclusions reached in the 1979 Statistics Canada study include:

- the effect of income on probability of household formation is statistically significant and quantitatively important. In most areas in Canada, the effect of a $1,000 increase in real income is to increase probability of household formation by over three percentage points.

- the income effect on probability of household formation is much greater for ages under 30 and declines greatly with age.

- unemployment has a very strong negative effect on the probability of household formation amongst non-married males.

- young single females will increase their percentage probability of household formation more than young single males as income rises.

- that the price of housing has an important effect on household formation decisions.

It can be concluded from the Statistics Canada Study that in good economic times when real incomes are increasing and unemployment is low, that the probability of household formation will likely increase. These economic conditions generally characterized our economy between 1961 and 1976. The reversal, a decline in the probability of household formation will occur in poor economic times when real incomes are falling and unemployment is rising. This generally characterizes our economy since 1978. In this period we have seen a decline in the percentage probability of household formation for the age group 15-24 years of age and a slow down in the rate of increase for age groups 25-44 and over 65 years of age. The fact that all age groups have not decreased their percentage probability of household formation from 1976 to 1980 can be explained by the fact that there was a rise in real incomes between 1976 and 1978 which equalled the decline between 1978 and 1980. Also, it should be noted that people are generally more reluctant to give up what they already have, meaning that there would be a general reluctance to combine households.

4. CHANGES IN THE AGE DISTRIBUTION OF THE REGION'S POPULATION

Figure 3 shows a comparison of the Region's population, growth and growth in the number of households in the Region between 1961 and 1980. The growth in households has increased considerably more than population; producing an overall decline in household size in this Region from 3.7 persons per household in 1961 to 2.90 persons per household in 1980. In urban areas, except for Cambridge, average household size is less than the Regional average. Kitchener has an average household size of 2.77 persons per household, Waterloo 2.87 and Cambridge 2.99. This tremendous percentage growth in households, in excess of population growth, cannot only be attributed to increases in percentage probability of household formation as shown on Table 1, but also to changes in the age structure of the Region's population.

Table 2 shows a comparison of the Region's population, for select years, from 1961 to 1980, by age cohort. Since 1961 there has been a steady decrease in the Region's population in age categories less than 15 years of age. In 1961, 32.4% of the Region's population was less than 15 years of age and by 1980 this percentage had declined to 23.4%. The net effect of this change in age structure, has been

FIGURE 3

THE GROWTH OF HOUSEHOLDS AND POPULATION IN THE KITCHENER C. M. A., 1961 - 1980

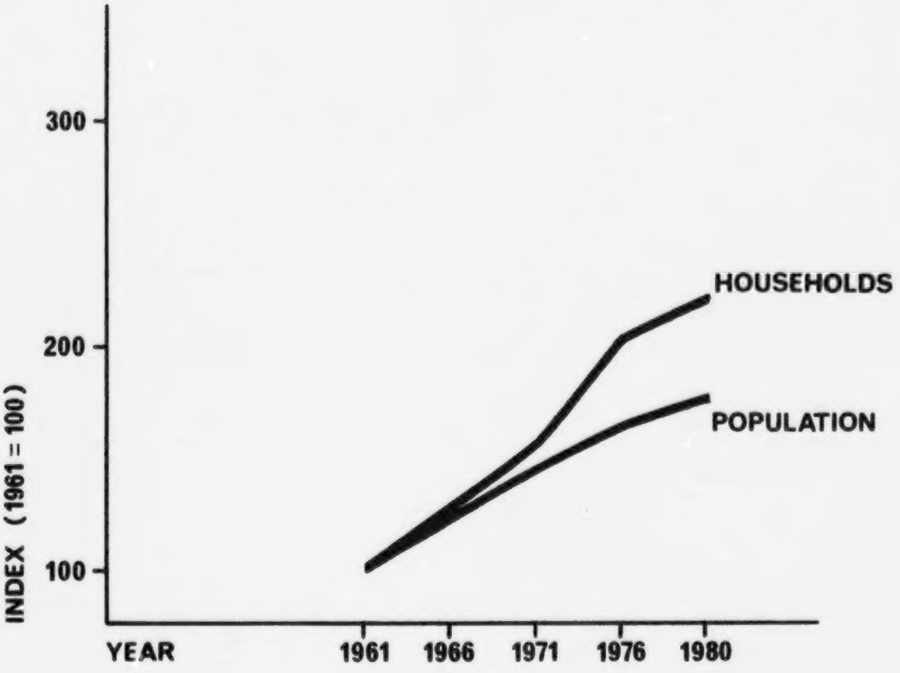


TABLE 2

POPULATION TRENDS BY AGE STRUCTURE 1961-1980

REGION OF WATERLOO

AGE GROUPS	1961[1]		1966[1]		1971[1]		1976[1]		1980[2]	
	#	%	#	%	#	%	#	%	#	%
0-14	57,297	32.4	69,538	32.1	74,730	29.4	76,565	26.5	70,558	23.4
15-24	24,034	13.6	36,933	17.0	48,700	19.2	57,325	19.8	61,967	20.6
25-34	25,192	14.3	28,160	13.0	36,610	14.4	48,345	16.7	52,224	17.3
35-44	24,419	13.8	28,708	13.3	30,015	11.8	32,370	11.2	35,974	11.9
45-54	18,468	10.4	21,481	9.9	26,260	10.3	30,290	10.5	30,061	10.0
55-64	13,538	7.7	15,772	7.3	18,530	7.3	21,295	7.4	24,234	8.0
65+	13,806	7.8	16,136	7.4	19,185	7.6	22,940	7.9	26,494	8.8
TOTAL	176,754	100.0	216,728	100.0	254,030	100.0	289,130	100.0	301,512	100.0
UNCLASSIFIED									6,236	
TOTAL									307,748	

1 Source: Census Canada

2 Source: Regional Assessment

an increase in the proportion of the Region's population in age categories capable of forming households.

Table 3 shows the percentage distribution of the Region's forecasted population growth "by age cohort" (See Appendix A). It is forecasted that the percentage of the Region's population under 15 years of age will continue to decline between 1981 and 2001, going from an estimated 23.7% to 20.9%. A higher percentage of the Region's population is forecasted to be in older age groups, which also have a higher percentage probability of household formation. In particular, the age group over 65 years of age will increase its proportion of the Region's population from 9.2% in 1981 to 12.2% in 2001. This change in age structure of the Region's population, to age groups with a higher probability of household formation, will by itself contribute significantly to the growth in the number of households in this Region in the future.

Of great importance to household growth in this Region, in the past as well as in the future, has been the "post war baby boom", which resulted in a dramatic rise in births between 1945 and 1961. Between 1971 and 1980 the population that was a product of the "baby boom" was generally divided between the age categories 15-24 years and 24-34 years. Table 2 shows that since 1971, the proportion that each of these age groups had of the Region's population had risen steadily. The age group 15-24 years of age, (which had a percentage probability of household formation of 15.7% in 1980), rose from 19.2% to 20.6% between 1971 and 1980. For the age group 24-34, (which had a percentage probability of household formation of 49.8% in 1980), the increase was from 14.4% to 17.3% between 1971 and 1980. As the "post-war baby boom" ages into older age categories, which have a higher percentage probability of household formation there will be an increase in households formed. This effect will be most pronounced as this age group ages from the age category 15-24 years of age into the age group 25-34 years of age, where in 1980 percentage probability of household formation increases from 15.7% to 49.8%. The influence of this group on household formation decrease as the "baby boom" leaves the age group

TABLE 3

POPULATION FORECASTS BY AGE STRUCTURE 1981-2001

REGION OF WATERLOO

AGE GROUPS	1981		1986		1991		1996		2001	
	#	%	#	%	#	%	#	%	#	%
0-14	73,930	23.7	76,205	22.3	83,098	21.8	90,187	21.4	96,350	20.9
15-24	55,721	17.8	55,013	16.1	54,141	14.2	56,061	13.3	59,998	13.0
25-34	58,687	18.8	62,812	18.3	66,120	17.3	67,594	16.1	66,729	14.5
35-44	38,633	12.4	51,389	15.0	64,980	17.0	71,349	16.9	74,641	16.2
45-54	31,066	9.9	32,958	9.6	40,287	10.6	53,597	12.7	66,927	14.5
55-64	25,526	8.2	29,430	8.6	30,724	8.0	32,865	7.8	39,874	8.7
65+	28,657	9.2	34,597	10.1	42,558	11.1	49,845	11.8	55,923	12.2
TOTAL	312,220	100.0	342,404	100.0	381,908	100.0	421,498	100.0	460,442	100.0

Source: Region of Waterloo Planning and Development Department
Population Projection to 2001 (February, 1980, PD 22/80)

25-34 into the age group 35-44, where in 1980 percentage probability of household formation changes from 49.8% to 54.5%. It should be noted, however, that this baby boom population will continue to influence tenure-split and housing preference to 2001.

5. FORECAST OF HOUSEHOLD GROWTH

As indicated in the preceding sections, probability of household formation involves both social and economic factors. The social factors establish the underlying trend for forecasted changes in percentage probability of household formation by age cohort. The economic factors determine whether this trend will materialize in the short run.

This forecast of household formation and household growth is done in two parts. First, there is a short-run forecast which projects household formation and household growth on an annual basis from 1981 to 1986 for the Region. The short-run forecast takes into account both economic and social factors. Second, there is a long-run forecast from 1986 to 2001. This forecast assumes that social factors which determine changes in percentage probability of household formation will not be constrained by economic conditions.

i) Short-Run Forecast of Household Growth 1981-1986

In the preceding sections it was established that specific social factors relating to changes in marital status and the goal of privacy and independence will likely continue to increase the percentage probability of household formation. However, in the short-run this trend will be influenced by economic factors. For this reason two forecasts are presented here for the short-run. The first-Short-Run Housing Demand forecast for the Region of Waterloo is the most likely scenario for household growth in this Region between 1981 and 1986, given our expected population growth. This forecast takes into explicit account expected economic conditions. The assumptions associated with this forecast are presented below. The purpose of the second forecast-Short-Run Housing Needs for the Region of Waterloo-is to assess what household growth may have been without major economic constraints. Both forecasts are presented below.

a) Short-Run Housing Demand for the Region of Waterloo 1981-1986

Housing demand is influenced by several economic factors including income, employment, economic uncertainty, consumer prices (excluding housing costs) and housing prices. There are several institutions which forecast economic activity using these economic indicators. In this Study economic forecasts by the Economic Council of Canada, the Ontario Economic Council, the Conference Board of Canada and the Federal Government were reviewed. These forecasts in general indicated an expected decline in real incomes (income after accounting for inflation) that unemployment is expected to increase and that inflation is expected to remain high in the 1981 to 1983 period. All factors are expected to improve by the mid 1980's. A discussion of these alternative forecasts is contained in Appendix "B" of this report. Table 4 shows the economic forecast of the Conference Board of Canada from 1982 to 1986 as well as past trends in select economic indicators. (This forecast was selected from the other alternatives economic forecast because it was generally representative of present trends. Based on this forecast the following assumptions have been made in forecasting percentage probability of household formation between 1982 and 1986 in this study.

1. that real incomes will continue to decline in the early part of the 1980's and begin to increase between 1983-1984. That this decline will affect younger age groups the most.

2. that unemployment will continue to increase through 1983 and begin to decline slowly thereafter. That unemployment will be higher amongst younger age groups.

3. that inflation will remain high between 1982 and 1986 and will only gradually decline in that period. Based on the current government policy of keeping interest rates above the rate of inflation by approximately 3.0 to 4.0%, mortgage rates will likely remain high during the forecast period. This may change, however, with fluctuations in American interest rates and with changes in government policy.

TABLE 4

ANNUAL RATES OF INCREASE IN REAL INCOME UNEMPLOYMENT, INFLATION AND HOUSING PRICES, 1974-1986

YEAR	REAL INCOME[1] (AVERAGE WAGES)	UNEMPLOYMENT[1]	INFLATION[1] (C.P.I.)	HOUSING PRICES[2] (SINGLE DETACHED)
HISTORICAL 1974-1980				
1974	+3.9%	5.3%	10.9%	
1975	+3.3	6.9	10.8	
1976	+5.4	7.1	7.5	
1977	+0.3	8.1	8.0	1.0%
1978	-3.0	8.4	8.9	1.5
1979	-1.6	7.5	9.1	0.0
1980	-1.1	7.5	10.2	2.5
1981	---	10.2	12.5	---

FORECASTED 1982-1986

Year	Real Income		Unemployment		Inflation	Housing Prices
	CANADA[3]	ONTARIO[3]	CANADA[3]	ONTARIO[3]	CANADA[3]	CANADA[3]
1982	+.1%	-.1%	8.7%	7.5%	10.2%	2.1%
1983	+.5	-.1	8.7	7.5	7.9	1.9
1984	+.1		8.5		6.5	6.3
1985	+.8		8.2		6.3	9.4
1986	+.8		7.8		6.9	10.1

[1] - Source: Department of Finance, Canada, The Current Economic Situation and Prospects for the Canadian Economy in the Short and Medium Term, November 1981.

[2] - Source: Canada Mortgage and Housing Corporation, Canadian Housing Statistics

[3] - Conference Board of Canada, Quarterly Canadian Forecast, April, 1982

4. that the price of housing in this Region will increase less than the increase in nominal wages (this excludes mortgage and maintenance costs)

5. that economic uncertainty will remain an important factor in people postponing household formation. That this factor will more greatly affect younger age groups.

Using these assumptions four alternative demand forecasts were developed.* These are compared in Figure 4. All alternatives forecast an initial decline in probability of household formation for all age groups, generally to 1983. (Because of an aging population with a higher probability of household formation, this decline is more than offset for Alternatives 2 to 4, as shown on Figure 4). This is followed by a subsequent rise in probability of household formation. The alternatives varied to the extent of the decline and the extent of the rise. Alternative 1 presents the most pessimistic forecast, with 15,725 households being formed in the Region between 1981 and 1986. Alternative 4, is the most optimistic, with 18,123 households being formed in this period. Alternative 2 is the alternative selected for this study. This alternative shows average percentage probability of household formation declining from 45.0% in 1981 to 44.7% in 1983 and subsequently rising to 46.4% in 1986. Much of this rise is attributable to the age structure of the Region's population. Economic factors have actually tempered this rise. The result of applying the forecast of percentage probability of household formation used in Alternative 2 to the Region's forecast of population growth from 1981 to 1986 is an expected growth of 16,397 households (high forecast) assuming a net migration figure of 12,000 people and 13,892 households (low forecast) assuming a net migration figure of 5,000 people.

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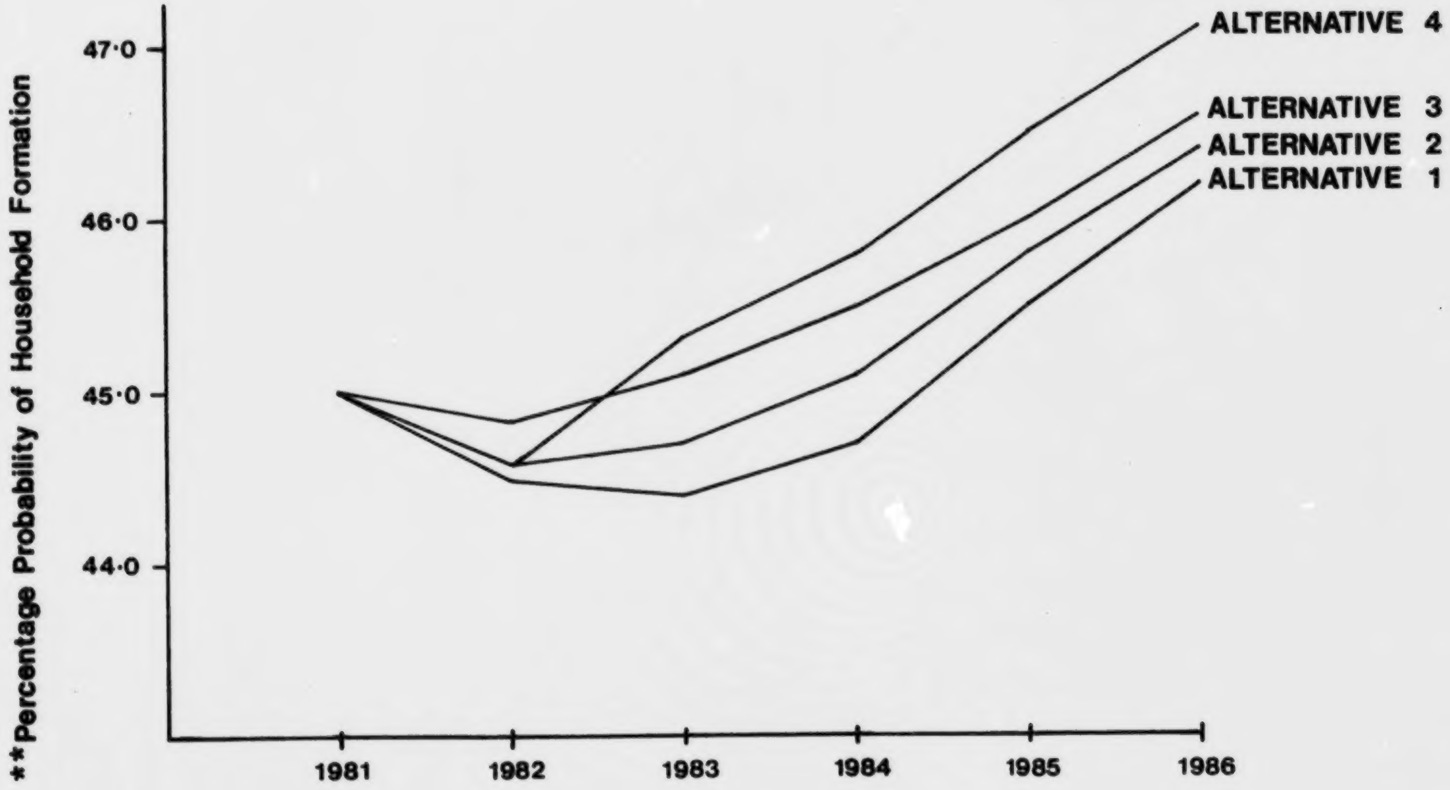
* Each alternative assumption is discussed in greater detail in Appendix "C" of this Report.

FIGURE 4

PERCENTAGE PROBABILITY OF HOUSEHOLD FORMATION* FOR TOTAL REGION POPULATION OVER 15 YEARS: 1981-1986



* Demand Forecast of Percentage Probability of Household Formation (See Appendix C)

** Much of the change in percentage probability of household formation after 1982 is explained by changes in the age structure of the region's population.

Table 5, shows the forecasted probability of household formation for individual years for the selected alternative 2.

In this forecast it is anticipated that probability of household formation will decline for all age groups between 1981 and 1982. The decline is more pronounced for the age groups 15-24 and 25-34 which are more affected by economic factors. Between 1982 and 1983 it is forecasted that the percentage probability of household formation will continue to decline but at a decreasing rate, for younger age groups. There is no forecasted decrease in probability for the age groups over 55 between these years. After 1983 it is expected that with real incomes rising again and unemployment decreasing (as shown on Table 4), that percentage probability of household formation will begin to rise slowly for all age groups. This rise will be more pronounced for younger age groups which were more affected by the economic downturn. By 1986 it is anticipated that all age groups will have a slightly higher percentage probability of household formation than they did in 1981.

Because economic factors affect population growth, particularly migration into and out of this Region, two alternative forecasts are presented. The High forecast assumes a net migration figure into Waterloo Region over the period 1981-1986 of 12,000 people. The Low forecast assumes a net migration figure of only 5,000 people.* The difference between the two forecasts in terms of household formation, is approximately 500 households formed annually.

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* The net migration assumption of 5,000 people into Waterloo Region between 1981 and 1986 was introduced because of concerns raised by some municipalities and the development industry that a 12,000 net migration figure is too optimistic. Regional Council has adopted a Regional Planning report which assumes a net migration figure of 12,000 people; (1980 Regional Planning Committee Report "2001 Regional Population Forecast").

TABLE 5

FORECASTED PERCENTAGE PROBABILITY OF HOUSEHOLD FORMATION, DEMAND FORECAST, REGION OF WATERLOO

1981-1986

Age of Household Head	Percentage of Population who are Heads of Households					
	1981	1982	1983	1984	1985	1986
15 - 24	15.0	13.7	13.3	13.6	14.4	15.3
25 - 34	49.8	49.0	48.7	49.0	49.6	50.2
35 - 44	54.5	54.2	54.0	54.2	54.4	54.6
45 - 54	53.5	53.3	53.1	53.2	53.5	53.6
55 - 64	58.0	57.8	57.8	57.9	58.0	58.1
Over 65	59.8	59.6	59.6	59.7	59.8	60.2

On an annual basis the demand forecast of household formation produces a variable number of households being formed. This is shown on Table 6, where a comparison is made with the needs forecast discussed below. It is important to note, that with a foreseeable worsening of economic times between now and 1983 that although the population in general will reduce its percentage probability of household formation, either through doubling up in one household or by postponing household formation, there still will be a perceived need by many to form a separate household. When economic times improve many of those who normally would have formed a household in 1982 and 1983 but didn't because of falling real incomes, high unemployment and increasing economic uncertainty will seize this turnaround as an opportunity to form a household. In other words, the perceived need to form a household in poor economic times is only postponed, it doesn't disappear.

It is important to note the contribution of the forecasted population to household growth between 1981 and 1986. If the probability of household formation remained constant between 1981 and 1986, for all age groups, we would have an annual increase in households in this Region of 3,144 households in the High forecast and 2,648 in the Low forecast. This would be totally attributable to the forecasted population growth for this Region between 1981 and 1986 and to the change in age structure of that population. If our actual population growth is outside of the range forecasted, this would result in a change in households formed other than that forecasted. In order to take this factor into account it is necessary to monitor population growth in this Region annually.

TABLE 6

FORECASTED ANNUAL GROWTH IN NUMBER OF HOUSEHOLDS

REGION OF WATERLOO 1981-1986

		1982	1983	1984	1985	1986	TOTAL 1981-1986
DEMAND FORECAST	HIGH*	1,647	2,576	3,653	4,203	4,318	16,397
	LOW *	1,159	2,090	3,158	3,690	3,795	13,892
NEEDS FORECAST		3,623	3,658	3,749	3,762	3,881	18,673

* A high and low range is provided for in the Demand Forecast. The High forecast is based on the assumption that this Region will experience a net migration of 12,000 people into this Region between 1981 and 1986. (1980 Regional Report "2001 Regional Population Forecast"). The Low forecast is based on the assumption that net migration will be only 5,000 people between 1981 and 1986. This assumption is based on recent trends in population growth in this Region which reflect present economic conditions.

b) Short-Run Housing Needs for the Region of Waterloo 1981-1986

Table 7, shows a forecast of household formation by select age groups when economic factors are not considered to be a major constraint to household formation. The following assumptions were made in making this forecast:

1. that the goal of privacy and independence will have a priority amongst all age groups.
2. that there will be an increased desire amongst young people to form their own household.
3. that there will be an increased desire amongst widowed and divorced seniors to maintain a separate household and that current income support programs and support services will be maintained or improved.
4. that changes in marital status which have contributed to a rise in the number of people divorced, separated and single and never married will continue.

Table 7 shows that based on social factors an increase in percentage probability of household formation for all age groups is forecasted. These increases generally approximate the rate of increase experienced for these age groups during the 1970's. The fact that real incomes are expected to decline to 1983 and unemployment remain high is not considered. Table 6 shows the annual expected growth in households in the Region using this forecast. The result is almost a constant number of households created annually in the Region. The annual forecasted increase in households for 1982 and 1983, 3623 and 3658 respectively, appears to be highly unrealistic given our short-run economic forecast. This forecast does, however, reflect apparent need.

ii) Long-Run Needs Forecast of Household Formation 1986-2001

It is assumed that in the period 1986-2001 that social factors which resulted in an increase in the

TABLE 7

FORECASTED PERCENTAGE PROBABILITY OF HOUSEHOLD FORMATION, NEEDS FORECAST REGION OF WATERLOO

1981-1986

Age of Household Head	Percentage of Population who are Heads of Households					
	1981	1982	1983	1984	1985	1986
15 - 24	15.0	15.4	15.8	16.3	16.8	17.4
25 - 34	49.8	50.0	50.3	50.5	50.8	51.0
35 - 44	54.5	54.6	54.7	54.8	54.9	55.0
45 - 54	53.5	53.6	53.7	53.8	53.9	54.0
55 - 64	58.0	58.1	58.2	58.4	58.6	58.7
Over 65	59.8	59.9	60.1	60.2	60.4	60.5

percentage probability of household formation between 1961 and 1980 will continue. The following assumptions are made with regard to factors contributing to this trend:

1. that the goal of privacy and independence will have a priority amongst all age groups.
2. that there will be an increased desire amongst young people to form their own household.
3. that there will be an increased desire amongst widowed and divorced seniors to maintain a separate household and that current income support programs and support services will be maintained or improved.
4. that changes in marital status which have contributed to a rise in the number of people divorced, separated and single and never married will continue.

Five alternative forecasts were developed and are compared in Appendix D. Table 8 shows the selected alternative forecast for 1986-2001. The 1986 starting point for percentage probability of household formation was derived from the short-run demand forecast for 1981-1986. In Table 9 the expected growth in households from this forecast is compared with the growth in households attributed entirely to population growth in the Region and the age structure of that population. The difference between the two accounts for the effect of social factors on increasing household formation.

Table 9 stresses the importance of our population forecast in determining household growth in this Region to 2001. Fluctuations in population will result in more (or less) households being created in this period. Population growth as well as changes in percentage probability of household formation have to be monitored closely to determine if household forecasts are being met. This can now be achieved annually through use of Regional Assessment data.

TABLE 8

FORECASTED PERCENTAGE PROBABILITY OF HOUSEHOLD FORMATION, REGION OF WATERLOO

1981 - 2001

Age of Household Head	Percentage of Population who are Heads of Households				
	1981	1986	1991	1996	2001
15 - 24	15.0	15.3	18.0	19.0	20.0
25 - 34	49.8	50.2	51.4	52.2	53.0
35 - 44	54.5	54.6	55.3	55.7	56.1
45 - 54	53.5	53.6	54.3	54.7	55.1
55 - 64	58.0	58.1	59.2	59.8	60.2
Over 65	59.8	60.2	61.4	62.2	63.0

TABLE 9

COMPARISON OF FACTORS CONTRIBUTING TO HOUSEHOLD GROWTH

REGION OF WATERLOO

1986-2001

GROWTH IN HOUSEHOLDS	DUE TO POPULATION GROWTH	DUE TO SOCIAL FACTORS
1986-1991 22,258	18,344	3,914
1991-1996 19,979	17,388	2,591
1996-2001 19,697	16,810	2,887

6. HOUSEHOLD TENURE

Once the decision to form a household has been made, the next decision becomes whether to own or to rent. This decision depends upon several factors. It is both a consumption decision and an investment decision. In an ownership unit the household is normally purchasing a larger unit (condominiums may be an exception) with better quality and a variety of amenities. In addition, it is expected that the value of this unit will rise, and benefits accruing to the owner will not be subject to tax.

Table 10 shows tenure split by age of household head for the Region of Waterloo for select years from 1971 to 1980. The Table shows that probability of tenure choice varies considerably by age of household head. In the age group 15-24 the probability of ownership in 1980 was only 11.2%. This compares to 77.5% in the age group 45-54. This difference can be largely explained by both income differences and household needs. As family size increases, rental housing is generally less able to meet perceived family needs. Also higher household incomes are more common amongst middle age household heads which allow these age groups to more readily satisfy their housing needs, whether it be for consumption purposes or investment purposes.

Because of these differences in tenure choice between age groups changes in the age structure of the Region's population towards an aging population, as discussed in detail in the preceding section, will have a great impact on the demand for rental and ownership housing units. The population in the age groups 15-24 and 25-34 are forecasted to increase only marginally in absolute numbers between 1981 and 2001. In relative terms, the age group 15-24 will comprise only 13.0% of the Region's population in 2001, compared to 17.8% in 1981 and the age group 25-34 will comprise only 14.5% of the Region's population in 2001 compared to 18.8% in 1981. (Table 3). Both of these age groups have a high probability of forming a rental household. For households where the age of household head is over 35 years of age ownership tenure far exceeds rental tenure. Although there has been slight shifts in preferences towards renting amongst these

TABLE 10

PROBABILITY OF HOUSEHOLD TENANCY

REGION OF WATERLOO

	ACTUAL							
	1971 1/		1974 2/		1976 1/		1980 3/	
	O	T	O	T	O	T	O	T
15 - 24	8.5	91.5	13.7	86.3	15.1	84.9	11.2	88.8
25 - 34	44.0	56.0	50.2	49.8	52.1	47.9	50.5	49.5
35 - 44	69.8	30.2	70.2	29.8	73.3	26.7	73.3	26.7
45 - 54	89.4	10.6	79.5	20.5	76.9	23.1	77.5	22.5
55 - 64	72.5	27.5	69.7	30.3	72.4	60 - 64 27.6	72.0	28.0
65 +	69.0	31.0	67.7	32.3	62.5	37.5	59.3	40.7

1/ Source: Statistics Canada, 1971 and 1976 Census.

2/ Source: Central Mortgage and Housing Corporation 1974 Survey of Housing Units: Cross Tabulation of Dwelling units and Households for Kitchener's C.M.A.

3/ Source: 1980 Regional Assessment.

age groups, growth in population in these age categories will largely result in a demand for ownership housing.

Table 10 also shows that the probability of owning or renting has changed significantly between 1971 and 1980 for specific age groups. For the age group over 65, the probability that a household will rent has increased from 31.0% in 1971 to 40.7% in 1980. This is partially explained by the large number of senior citizen housing projects which have come on stream in this Region over the last few years. The age group 45-54 years of age has also increased its tendency to rent, going from 10.6% in 1971 to 22.5% in 1980. The increase in the preference to rent for this age group to 1976 was influenced by several factors including rising energy costs, financial gains obtained from selling a home after the rapid increase in home prices between 1973 and 1975, the low cost of renting, and the increasing desire of this age group for mobility. The tenure split for this age group however, has remained relatively stable since 1976. The age groups 15-24 and 25-34 increased their probability of ownership between 1971 and 1976 by approximately 7.0%. The increase in probability of ownership for these age groups between 1971 and 1976 is attributable to a combination of higher household income and government incentive programs towards home ownership. From 1979 to 1981 there were no government incentives directed at home ownership and in addition real incomes, particularly for younger age groups, declined. This in turn likely explains the decline in probability of ownership for these two age groups which occurred between 1976 and 1981. The introduction of an interest free loan of $5,000 in the 1982 provincial budget and a $3,000 grant in the June 1982 federal budget (Canada Home Ownership Stimulation Plan) will probably increase the probability of ownership for younger age groups.

The number of children in a household also influences a tenure choice. The larger the family the more likely a household is to own. Between 1971 and 1980 household size in the Region of Waterloo has continually declined. The Region's forecast of population and household formation shows a continuing decline in household size from 2.9 in 1981 to 2.5 in 2001. This trend favours an increase in the demand for rental accommodation.

Current income in relationship to the cost of owning a housing unit is another important factor in determining home ownership. Financial institutions require a minimum income in relation to size of a mortgage. Income primarily serves as a constraint to home ownership for younger consumers who have fewer assets. The greater the assets the less likely income will serve as a constraint on home ownership. During the period 1970 to 1978 when real incomes were generally increasing, home ownership generally increased amongst the age groups 15-24 and 25-34. However, after 1978 when real income began to decline home ownership amongst these groups declined. With real income forecasted to decrease in Ontario in the next few years, as indicated on Table 4, we can expect a tendency for younger age groups to increase their preference to rent, providing there is a sufficient supply of rental housing.

Economic uncertainty is another factor greatly affecting tenure choice. The capital risk involved in assuming a mortgage has been intensified by the dramatic increase in mortgage rates over the last year. On the other hand, the presence of rent controls has limited rent increases, except where building mortgages are being renewed. The effect of both of these factors has been for greater certainty in the rental market. As a result the demand for rental housing in Waterloo Region has increased significantly in the last year. In the past year vacancy rates for rental buildings have declined from over 2.0% to approximately 1.4% in April, 1982.

With the vacancy rates for rental housing in the Region at a 10 year low, it is conceivable that availability of rental units could influence tenure choice. However, if the number of units which are planned under the Ontario Rental Construction Loan Program in this Region are completed (1,385 units committed in 1981) availability of rental units should not impose a short-run constraint. However, it should be noted that 50% of the total units built in this Region over the last five years have been done through government assistance. Such assistance appears to be necessary in order to maintain an adequate supply of rental housing, even at market rents.

Forecasting tenure split requires that both economic factors as well as social factors be taken into account. In the short run economic factors tend to greatly affect tenure choice. This has been evidenced by the dramatic decrease in vacancy rates in the Region of Waterloo over the past year. Should the economy improve in the near term we would expect an increased demand for ownership units. Another important factor to consider in forecasting tenure choice is supply constraints. Supply does not appear to be a constraint in the delivery of ownership units. However, the delivery of rental units in this Region has been largely coincidental with government assistance programs. (See Table 1). Without such programs very few rental units have been developed.

The following is a forecast of tenure split for the Region of Waterloo. The first forecast is a demand forecast for the period 1981-1986. This forecast explicitly takes into account economic factors. A high and a low range are provided for this forecast based on an assumed net migration figure of 12,000 and 5,000 people respectively. The second forecast is a needs forecast from 1986 to 2001. It is assumed in this forecast that social factors have an important influence on tenure choice.

i) Short-Run Demand Forecast of Tenure Split 1981-1986

It has been established that tenure split is influenced by several economic factors including income, economic uncertainty, mortgage rates and housing prices. In the preceding section on household formation an economic forecast to 1986 was presented. This forecast indicated that real income (income after accounting for inflation) is expected to decrease, that unemployment will increase and that inflation is expected to remain high. All factors are expected to improve by the mid-1980's. Table 4 provides a summary of this forecast. Based on this economic forecast, the following assumptions have been made in forecasting tenure split between 1981 and 1986.

1. that economic uncertainty will remain a significant factor in discouraging households from assuming capital risk (a mortgage), thereby increasing the preference towards renting.

2. that high mortgage rates will persist through to 1983, thereby creating a strong preference for rental units particularly amongst younger age groups.
3. that the price of ownership housing will increase less than increases in nominal wages (excluding mortgage and maintanance costs).
4. that households in general will maintain a strong preference towards ownership which will result in an increased demand for ownership units when the economy turns around.
5. that although vacancy rates will remain low in this Region, it is assumed that the supply of rental units will still be sufficient to meet demand in the short-run. This assumes that government incentives will still be available to encourage additional rental construction.
6. that government incentives for non-profit corporations to develop senior citizen rental housing will continue.
7. that rent controls will not be removed in the immediate future. Should rent controls be removed, we would expect an immediate increase in the demand for ownership housing.

The forecasted probability of tenure split to 1986 which is derived from these assumptions is presented in Table 11. The forecast presents a declining probability of ownership to 1983 for all age groups. The basis for this forecasted decline, is an assumed worsening Regional economy to 1983. It is assumed that the age groups 15-24 and 25-34 are the age groups most affected by a downturn in the economy. As a consequence, their probability of ownership is forecasted to decline the greatest.

It should be noted that the decline in the incidence of ownership for the age group over 65 is based largely upon non-economic factors. The reasons for this decline stem from the increasing supply of senior citizen apartments in this Region. It is forecasted that the supply of senior citizen apartments

TABLE 11

FORECASTED PROBABILITY OF TENURE SPLIT

REGION OF WATERLOO - 1981-1986

AGE OF HOUSEHOLD HEAD	1981		1982		1983		1984		1985		1986	
	Own	Rent	Own	Rent	Own	Rent	Own	Rent	Own	Rent	Own	Rent
15 - 24	10.0	90.0	9.5	90.5	9.0	91.0	9.5	90.5	10.0	90.0	11.0	89.0
25 - 34	49.7	50.3	49.0	51.0	48.5	51.5	49.0	51.0	49.7	50.3	50.8	49.2
35 - 44	73.3	26.7	73.0	27.0	72.7	27.3	73.0	27.0	73.3	26.7	73.3	26.7
45 - 54	77.0	23.0	76.8	23.2	76.6	23.4	76.8	23.2	77.0	23.0	77.0	23.0
55 - 64	72.0	28.0	71.9	28.1	71.8	28.2	71.9	28.1	72.0	28.0	72.4	27.6
Over 65	58.0	42.0	57.5	42.5	57.0	43.0	56.5	43.5	56.0	44.0	55.5	44.5

in this Region will continue to increase so that a greater percentage of the Region's senior citizen population will prefer renting.

After 1983, the Region's economy is forecasted to gradually improve. This will result in an increase in percentage probability of ownership for all age groups, except seniors who will continue to be drawn into senior citizen apartments. The largest increase in incidence of ownership is forecasted to occur in younger age groups who, in turn, experienced the largest decline in the economic downturn.

By applying these probabilities of tenure split to the Region's forecasted housing demand to 1986, which was developed in the preceding section, Table 12 is derived. This forecast shows a high-low range based on alternative forecasted net migration figures into the Region of 12,000 and 5,000 people between 1981 and 1986.

From this forecast, it is estimated that just over 30% of the households formed between 1981 and 1986 will be rental households and just under 70% will be ownership households. The high percentage of ownership households is explained by the age structure of the Region's population. The two age groups with a higher proportion of households renting, 15-24 years of age and 25-34 years of age, contribute less than 15% of the estimated number of households formed in the Region between 1981 and 1986. In comparison, the middle age groups which have a probability of ownership over 70.0% contribute over 60% of the estimated number of households formed in the Region between 1981 and 1986.

Of the households present in the Region during the 1980 Regional assessment, approximately 60% were ownership households and 40% rental. As demonstrated above, because of an aging population we expect a higher percentage of the Region's households in the future to be ownership households. This trend has been tempered somewhat in the short-run because of poor economic circumstances which favour renting. Despite these economic factors, by 1986 it is estimated that almost 61% of the Region's households will be ownership households.

TABLE 12

FORECAST OF GROWTH IN NUMBER OF HOUSEHOLDS

BY TENURE-SPLIT

1981-1986

	OWNERSHIP		RENTAL		TOTAL HOUSING GROWTH	
	High	Low	High	Low	High	Low
1982	1,147	870	500	289	1,647	1,159
1983	1,476	1,200	1,100	890	2,576	2,090
1984	2,718	2,431	935	727	3,653	3,158
1985	2,590	2,295	1,613	1,395	4,203	3,690
1986	2,931	2,620	1,387	1,175	4,318	3,795
TOTAL	10,862	9,416	5,535	4,476	16,397	13,892

The forecasted total increase in rental households in the Region between 1981 and 1986 ranges from a high of 5,535 households to a low of 4,476 households. Because of existing low vacancy rates this demand cannot be accommodated in the existing rental stock. It must be provided for in new rental construction and conversion of ownership units to rental accommodation. In 1981, building permits were issued for 903 rental units in the Region. Of these units approximately 677 units are being developed under the Ontario Rental Construction Loan Program. Approximately 100 of the rental units constructed will be available exclusively for senior citizen housing.

Because of specific ownership difficulties, i.e., high mortgage rates and the difficulty in selling condominium units, we can expect an increase in the number of single family units, semi-detached units and condominium units being rented. In the 1980 Regional Assessment approximately 9.0% of all households living in single family dwellings were rental households. This compares with only 6.0% in 1976.* Also in 1980, approximately one-third of all households living in condominiums were rental households. We expect that this proportion will continue to rise.

It is estimated that in 1981 that just over 700 rental households were created in the Region of Waterloo. Approximately 400 of these households occupied existing vacant rental units and 300 households occupied new rental units. Over this period the overall Regional vacancy rate declined from approximately 2.0% to 1.0%. In addition to rental households approximately 900 ownership households were created in the Region.

It is expected that there will be no difficulties in the delivery of ownership housing in the 1981 to 1986 period. The Region has sufficient land in registered plans of subdivision to meet the demand for ownership housing to 1986. In addition, the building industry in this Region has the capacity to produce the estimated ownership units required. Between 1971 and 1976 a similar number of ownership households were accommodated despite the fact that there was also a high building activity for rental units.

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* Source: 1976 Census of Canada, Catalogue 93-802

ii) Long-Run Needs Forecast of Tenure Split, 1986-2001

In the long-run, changes in the age structure of the Region's population will have a much more pronounced effect on the need for ownership and rental housing than marginal changes in the tenure split for various age groups. Nevertheless, specific factors will have an effect on tenure choice. The following assumptions have been made for the forecast of tenure choice for the period 1986-2001.

1. rising energy prices and housing maintenance cost will increase the demand for rental housing amongst those age groups on fixed incomes, that is those groups primarily over 65.
2. generally household size will continue to decline which will increase the demand for rental units and condominium ownership units,
3. that condominium living will become an important source of housing for retired and semi-retired households as well as households of smaller size.
4. that rent controls will be phased out which will increase the demand for ownership housing.
5. that no government incentives will be implemented to encourage home ownership.
6. that there will be an adequate supply of rental housing, and improved amenities in rental housing will increase the demand for rental housing particularly amongst younger people.

Table 13 shows the forecasted tenure split for various age groups for the Region of Waterloo from 1986 to 2001. It is forecasted that tenure split for the age groups 15-24 and 25-34 will remain constant from 1986 to 2001. The probability of ownership for households in these age categories was actually higher in 1976 than that recorded in 1980. This was largely due to government programs which were designed to stimulate home ownership and also due to rising real incomes for this group. It is not

TABLE 13

FORECASTED PROBABILITY OF TENURE SPLIT

REGION OF WATERLOO - 1981-2001

AGE OF HOUSEHOLD HEAD	1981		1986		1991		1996		2001	
	Own	Rent	Own	Rent	Own	Rent	Own	Rent	Own	Rent
15 - 24	10.0	90.0	11.0	89.0	11.0	89.0	11.0	89.0	11.0	89.0
25 - 34	49.7	50.3	50.8	49.2	50.8	49.2	50.8	49.2	50.8	49.2
35 - 44	73.3	26.7	73.3	26.7	73.0	27.0	72.9	27.1	72.9	27.1
45 - 54	77.0	23.0	77.0	23.0	76.7	23.3	76.5	23.5	76.4	23.6
56 - 64	72.0	28.0	72.4	27.6	72.0	28.0	71.7	28.3	71.5	28.5
over 65	58.0	42.0	55.5	44.5	55.0	45.0	54.6	45.4	54.0	46.0

anticipated that government programs designed to stimulate ownership will be re-introduced in the long-run forecast period.

From 1986 to 2001 it is anticipated that the age groups 35 to 44, 45 to 54, and 55 to 64 will slightly increase their incidence of renting. This is forecasted based on the anticipation of smaller family sizes and rising energy prices. Rising energy prices largely account for the expected increase in the incidence of renting for the age group 55 to 64, because a higher proportion of these households are on fixed incomes.

It is expected that households in the over 65 age category will continue to increase their incidence of renting. Most of the households in this age group are on fixed incomes and therefore, will be more affected by higher energy prices. In addition, it is expected that governments will continue to encourage the development of senior citizen rental housing through municipal non-profit and private non-profit housing projects.

As previously indicated, for this forecast we have assumed an increase in the popularity of condominiums for retired, semi-retired and households of smaller size. If this trend does not materialize then we would expect a general increase in incidence of renting amongst age groups over 35 years of age. This would increase the demand for rental housing beyond what is forecast.

Table 14 shows the forecasted tenure split of household growth in the Region for five year periods from 1986 to 2001.

In the long-run forecast of household growth by tenure split, it is expected that rental households will generally account for 35% of the household growth in the Region between 1986 and 2001. (This includes rental apartment, townhouse, semi-detached, and single family detached rental units). Nevertheless, rental households as a percentage of total households in the Region will actually decrease from 1981 to 2001. In 1981 just over 40% of the Region's total households are estimated as rental households. By 2001, it is estimated that just over

TABLE 14

FORECASTED GROWTH IN NUMBER OF HOUSEHOLDS

BY TENURE-SPLIT

1986-2001

	Ownership	Rental	Growth in Households
1986-1991	12,966	9,292	22,258
1991-1996	13,083	6,896	19,979
1996-2001	12,905	6,792	19,697

38% of the Region's total households will be rental. This is entirely explained by an aging population. That is, a smaller proportion of the households in the Region will be in age categories which have a higher incidence of renting.

7. MUNICIPAL ALLOCATION

Having forecast the expected growth in number of households on a Regional basis, it is now possible to allocate this expected growth in households, for both rental and ownership households, to area municipalities. This allocation is based on the age structure of the population of each area municipality as well as the existing ownership/rental split of that particular municipality. In this allocation, it is expected that much of the growth of rental households in the Townships will affect the demand for rental units in Kitchener, Cambridge and Waterloo..

The age structure for the population of each area municipality as well as the tenure-split for households is available through the Regional Information System, which uses as its base assessment data. By establishing the difference between the population age distribution of each area municipality and the Regional population age distribution, and by keeping this difference constant and applying it to the Regional population forecast it is possible to develop a population forecast for each area municipality to the year 2001. Using the same method to determine tenure-split for each municipality, but this time using percentage difference in tenure-split between area municipalities and the Region, it is possible to allocate expected household growth in each municipality by ownership and rental units to the year 2001. This allocation takes into account the particular characteristics of the population and housing market of each municipality as of 1981. The estimated municipal growth in households could vary if the expected population growth in each area municipality doesn't materialize and if the age structure and tenure-split varies significantly from that forecast.

The housing market in the Region of Waterloo is highly integrated. Households frequently live and work in different municipalities. Therefore, predictions of household growth on a municipal basis must take into account shifts in preference amongst households and supply constraints. In the Township of Woolwich, for example, limitations on capacity of the sewage treatment plants of Elmira and St. Jacobs will likely reduce Woolwich's future share of Regional household growth. On the other hand, the expansion to the New Hamburg and Ayr sewage treatment plants should increase household growth in Wilmot and North Dumfries Townships. In addition, higher energy costs are expected to shift household growth closer to employment areas. In this forecast, these factors are expected to affect household growth on a municipal basis after 1986.

i) Short-Run Demand

In the period 1981 to 1986 there are two demand forecasts for the Region. The High Forecast assumes that net migration into this Region will be 12,000 people from 1981 to 1986. The Low Forecast assumes that net migration will be 5,000 people. Table 15 shows the municipal allocation for the High Forecast and Table 16 shows the municipal allocation for the Low Forecast.

Based on housing starts in 1980 and 1981, it appears that the high forecast for ownership households more closely approximates demand in the Townships and Waterloo and the low forecast approximates demand in Kitchener and Cambridge. In 1980 and 1981, Kitchener issued building permits for approximately 400 ownership units and Cambridge, 125 ownership units. The 1982 low forecasts of 420 and 160 households for these municipalities, respectively, approximates housing construction over the past few years. It should be noted that both municipalities have in the past experienced much greater growth. In 1977, 781 ownership units were constructed in Cambridge and 720 in Kitchener, down from 1,647 ownership units in 1976.

In Waterloo building permits were issued for an average of 355 ownership units in both 1980 and 1981. This coincides with the High forecast of household growth expected in 1982. In Waterloo in the period 1976 to 1981 the construction of ownership units was similar to the range for the High forecast

TABLE 15

SHORT-RUN HIGH* FORECAST OF HOUSEHOLD GROWTH BY TENURE-SPLIT AND MUNICIPALITY

1981-1986

OWNERSHIP

	1982	1983	1984	1985	1986
Kitchener	532	620	1200	1185	1300
Cambridge	210	325	700	600	720
Waterloo	325	425	588	560	650
Woolwich	25	35	100	100	100
Wilmot	25	30	70	80	80
Wellesley	15	25	40	40	50
North Dumfries	15	15	20	25	30
Region	1147	1475	2718	2590	2930

RENTAL

	1982	1983	1984	1985	1986
Kitchener	298	560	475	825	710
Cambridge	117	260	185	353	270
Waterloo	85	225	240	400	372
Woolwich	0	25	15	15	15
Wilmot	0	20	10	10	10
Wellesley	0	5	5	5	5
North Dumfries	0	5	5	5	5
Region	500	1100	935	1613	1387

* Assumes net migration of 12,000 people into the Region of Waterloo between 1981 and 1986.

TABLE 16

SHORT-RUN LOW* FORECAST OF HOUSEHOLD GROWTH BY TENURE-SPLIT AND MUNICIPALITY

1981-1986

OWNERSHIP

	1982	1983	1984	1985	1986
Kitchener	405	501	1072	1050	1163
Cambridge	160	265	630	530	645
Waterloo	245	346	535	496	581
Woolwich	20	32	70	89	89
Wilmot	20	24	70	71	71
Wellesley	10	20	36	35	45
North Dumfries	10	12	18	23	26
Region	870	1200	2431	2294	2620

RENTAL

	1982	1983	1984	1985	1986
Kitchener	172	455	369	720	600
Cambridge	68	205	144	301	230
Waterloo	49	185	187	345	316
Woolwich	0	20	11	13	13
Wilmot	0	17	8	8	8
Wellesley	0	4	4	4	4
North Dumfries	0	4	4	4	4
Region	289	890	727	1395	1175

* Assumes net migration of 5,000 people into the Region of Waterloo between 1981 and 1980.

from 1981 to 1986. In Woolwich, Wellesley, North Dumfries and Wilmot, construction of ownership units in 1980 and 1981 approximated the high forecast for 1982 and 1983.

Rental construction varies considerably by municipality. It is also affected by the absence or presence of government incentives to encourage rental construction. From 1981-1983, 1,385 rental units are expected to come on stream in the Region as a result of the Ontario Rental Construction Loan Program. This is expected to exceed the demand for rental households in the Region in 1982, based on the high forecast of expected household growth of approximately 900 units. Consequently, some of these units are not expected to be absorbed into the rental market until 1983. Therefore, the additional units constructed in 1982, should increase Regional vacancy rates in the 1982 to 1983 period to more acceptable levels. Given the apparent demand for rental units and expected household growth, the Regional vacancy rate in the 1982 to 1983 period should rise to between 2% and 3%.

All of the area municipalities in the past have experienced rental construction in any given year in excess of the high forecast. Kitchener in 1977 had 970 rental units constructed and in 1981 building permits were issued for 536 rental units. Cambridge in 1976 had 375 rental units constructed and building permits were issued for 181 rental units in 1981. Waterloo had over 700 rental units constructed in 1973 and in 1981 building permits were issued for 95 rental units. Rental construction in the Townships has ranged from a high of 184 rental units constructed in 1973 to zero units in 1977 and 1978. Based on building permit history rental construction varies significantly from year to year for all municipalities because of fluctuations in vacancy rates, government programs to stimulate rental construction and financing arrangements. Therefore, in the short term, expected rental household growth is not anticipated to coincide directly with rental starts. However, over the five year period from 1981 to 1986 the municipal allocations for the high forecast shown in Table 15 and low forecast shown in Table 16 are expected to represent anticipated growth in rental households, depending on net migration.

ii) Long-Run Forecast

Table 17 shows expected household growth by municipality for five year periods from 1986 to 2001. The allocation of ownership households assumes a greater proportion of growth in urban municipalities due to rising energy costs and sewage treatment plan capacity limitations in St. Jacobs, Elmira and Wellesley. The allocation of rental households by municipality assumes that the distribution of household growth will approximate the existing proportion of rental households in area municipalities over this forecast period. This assumption is based on the expected desire to locate closer to employment, which should increase the demand for rental housing in the Townships over the long-run forecast. This will partially offset factors relating to restriction of growth due to limited sewage treatment plan capacity in some Townships.

8. HOUSING AND LAND SUPPLY

i) Existing Housing Stock

Table 18 shows households by structural type and municipality for 1980. In 1980, 56% of the Region's households lived in single family detached units. This compares to 60% in 1971. The decline is attributable largely to the introduction of condominiums and to an increase in popularity of row houses.

By municipality, the Townships have a much higher proportion of their households living in single family detached residential units. In North Dumfries and Wellesley approximately 90% of all households live in single family detached units. In Woolwich and Wilmot the percentage is approximately 80%. Amongst the urban municipalities, approximately 50% of Kitchener's households lived in single family detached units in 1980, 54% in Waterloo and 57% in Cambridge. This is a decline of approximately 5% for each of these municipalities from 1971.

TABLE 17

LONG-RUN FORECAST OF HOUSEHOLD GROWTH BY TENURE-SPLIT AND MUNICIPALITY

1986-2001

OWNERSHIP

	1986-1991	1991-1996	1996-2001
Kitchener	5,705	5,770	5,710
Cambridge	3,306	3,402	3,360
Waterloo	2,956	3,009	3,000
Woolwich	325	300	275
Wilmot	337	314	300
Wellesley	207	170	155
North Dumfries	130	118	105
Region	12,966	13,083	12,906

RENTAL

	1986-1991	1991-1996	1996-2001
Kitchener	4,647	3,448	3,396
Cambridge	2,137	1,586	1,562
Waterloo	2,202	1,635	1,610
Woolwich	121	90	88
Wilmot	93	69	68
Wellesley	46	34	34
North Dumfries	46	34	34
Region	9,292	6,896	6,792

TABLE 18

HOUSEHOLDS BY STRUCTURAL TYPE*

1980

	Single Detached	Single Attached	Plexes	Apartment	Condominium	Other	Total
Kitchener	24,992	4,792	4,705	12,409	1,698	1,089	49,685
Cambridge	14,312	3,481	2,542	3,999	183	536	25,053
Waterloo	9,894	1,832	989	4,620	773	151	18,259
Woolwich	3,875	217	305	269	39	147	4,852
Wilmot	2,721	151	123	167	0	99	3,261
Wellesley	1,640	9	37	35	0	35	1,756
North Dumfries	1,355	17	31	12	0	68	1,483
REGION	58,789	10,499	8,732	21,511	2,693	2,125	104,349

* Source: 1980 Regional Assessment. Complete figures for 1981 are not available for the Region and area municipalities, since the 1981 Regional Assessment was only a partial assessment.

ii) Trends in Housing Starts: Changes in Preferences

Figure 5 indicates that throughout the late 1960's and into the early 1970's the Region experienced a continuous decline in the percentage of building starts for single family detached dwellings, with a corresponding increase in the percentage of starts for multiple units. The growth in households in this period came largely from the age group 15 to 24, which had a probability of renting of close to 90% during this period. Figure 6 shows the increase in rental housing as a percentage of housing starts in the Region from 1960 to 1972.

Starting in 1972, the trend established towards rental housing in the late 1960's and early 1970's began to reverse. From 1972 to 1975 there was a significant increase in ownership of multiple units, as shown on Figure 6. This trend reflected the needs of younger families for lower priced ownership housing.

The increasing trend towards ownership units continued after 1975, with single family detached units comprising a larger percentage of housing starts. From an average of approximately 30% of all housing starts in the early 1970's single family detached units comprised approximately 50% of all housing starts after 1975, (as shown on Figure 5). This corresponded to a decline in starts of ownership multiple units, largely due to the termination of the Assisted Home Ownership Program in 1978.

It is expected that throughout the 1980's single family detached dwelling units will generally comprise approximately 50% of all housing starts. This expectation is based on the age structure of the Region's population, which will produce dramatic increases in the number of households in the age groups 35 to 54 years of age. This trend, however, could be tempered in the short-run by continued economic uncertainty, high unemployment, and high interest rates. In the long-run, rising energy costs and decreasing family size may also temper this trend.

The decrease in rental housing starts in the Region in the latter half of the 1970's was not only

FIGURE 5

HOUSING UNITS - BY TYPE

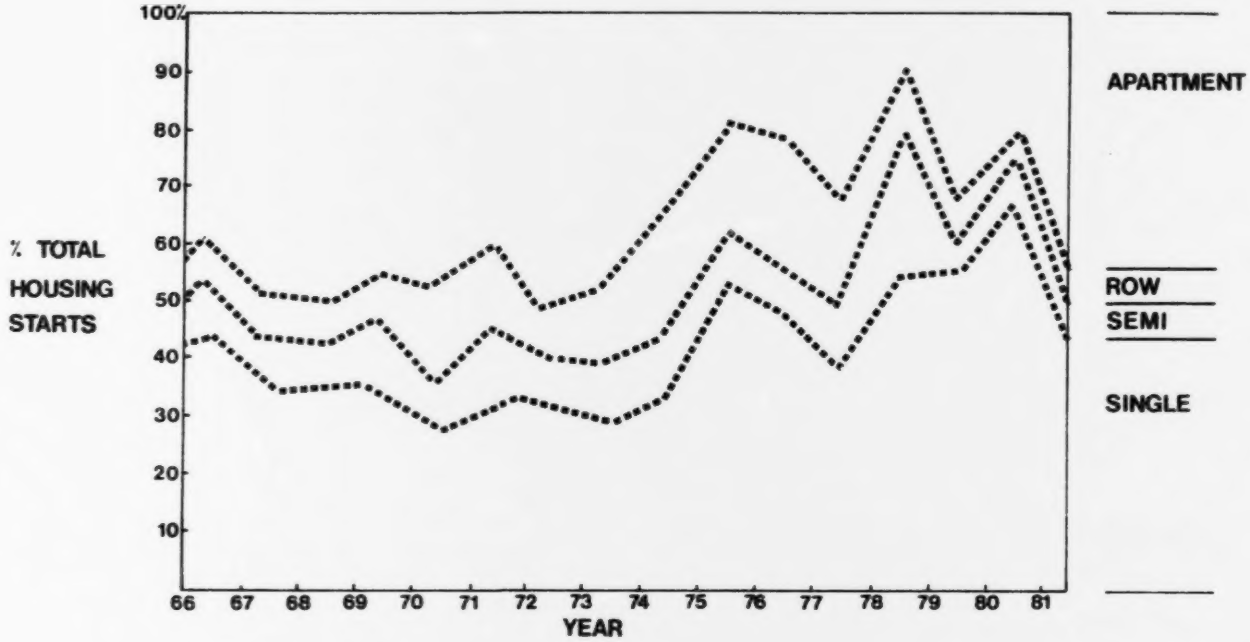
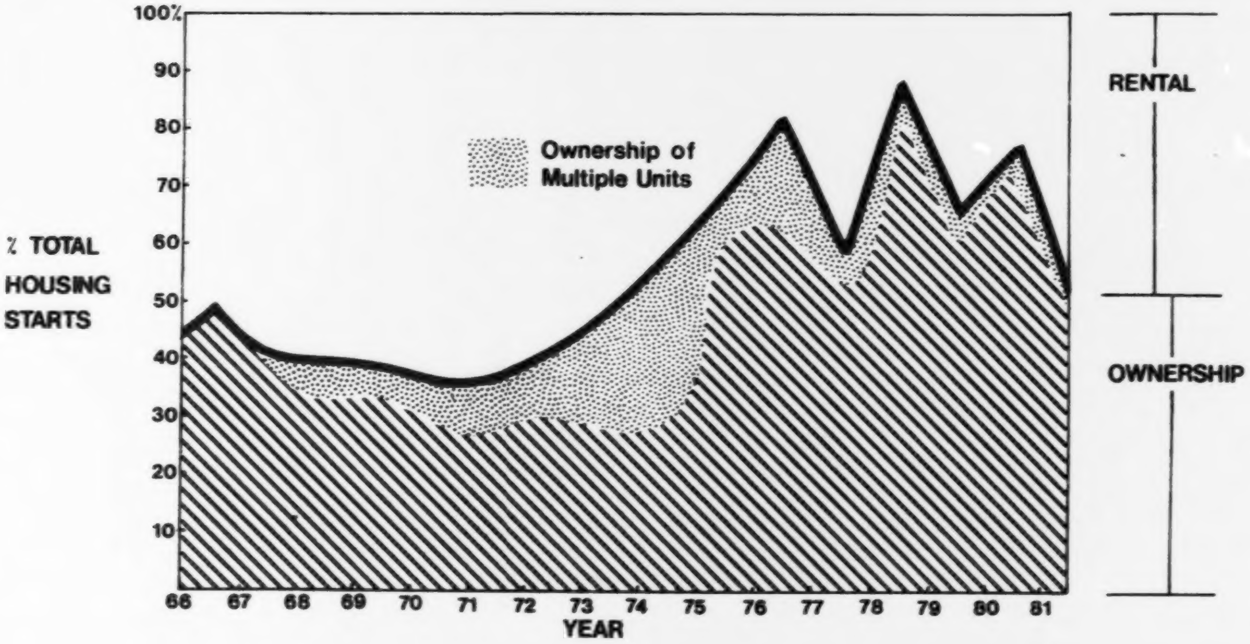


FIGURE 2·6

HOUSING UNITS - BY TENURE



SOURCES : CANADIAN HOUSING STATISTICS · 1979 - 1980. Table 6, Dwelling Starts in Canada.
Building Permit Data for area Municipalities

attributable to the changing age structure of the Region's population but also escalating construction cost compared to market rents and the introduction of rent controls. Approximately 50% of rental construction since the mid 1970's has occurred as a result of government programs. Up until 1978, the Assisted Rental Program provided stimulus for rental construction. In 1981, the Ontario Rental Construction Loan Program and MURB tax allowances significantly increased rental construction in this Region. It is expected that without the removal of rent controls, government incentive programs will be a key determining factor in rental construction.

Figures 7 and 8 show building permits issued for ownership and rental units, respectively, along with government housing programs from 1972 to 1982. For both rental and ownership housing it can be seen how the introduction of a housing program provided an initial stimulus to construction activity, followed by a drop and then a rise in building activity just before the program was removed.

iii) Building Permits Issued

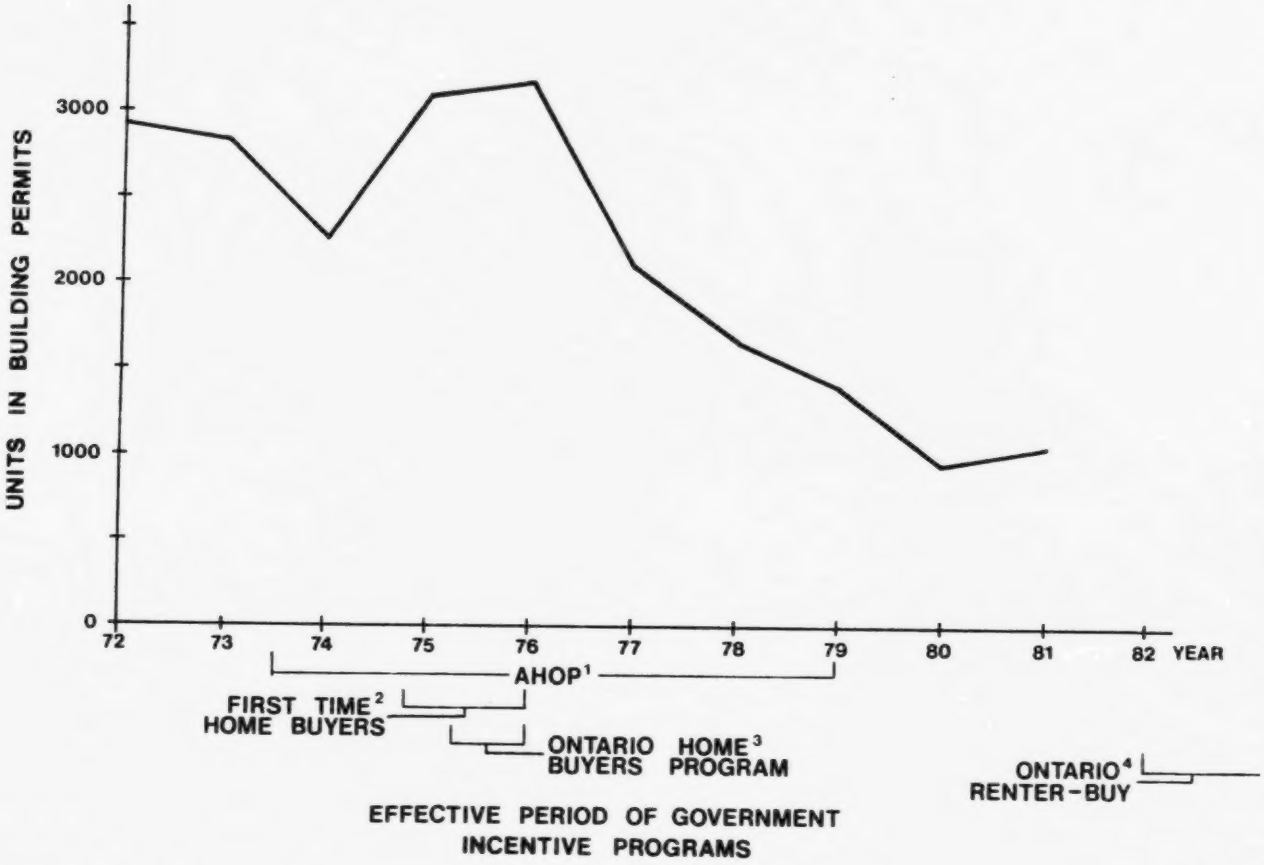
The number of building permits issued in the Region declined from 4,430 residential units in 1975 to 1,934 units in 1981. This decline is largely attributable to a singificant decrease in the Region's population growth. The Region experienced a growth of 18,618 people in the four year period 1976 to 1980 compared with 35,100 in the previous five year period, 1971 to 1976. This reduction in population growth was primarily a result of reduced migration into this Region as employment opportunities did not continue to expand at their previous levels.

Figure 9 shows building activity, by structural type for the Region from 1972 to 1981.

In the City of Kitchener, building permits issued have declined from an average of 2,000 residential units annually in the 1971 to 1978 period to an average of 827 units annually in the 1979 to 1981 period. Although the numbers of single family detached units and semi-detached units have declined

FIGURE 7

GOVERNMENT INCENTIVE PROGRAMS FOR OWNERSHIP UNITS BY BUILDING PERMITS ISSUED 1972 - 1981 REGIONAL MUNICIPALITY OF WATERLOO



1. AHOP - Assisted Home Ownership Program - Federal

   The program provided loans and grants to help lower income families with one or more children to become owners of new or existing housing. The AHOP program was in operation from June 1973 to December 31, 1978.

2. First Time Buyers Program - Federal

   Program provided a $500.00 grant for first time home buyers for homes occupied between November 1, 1974 and December 31, 1975.

3. Ontario Home Buyers Grant Program - Provincial

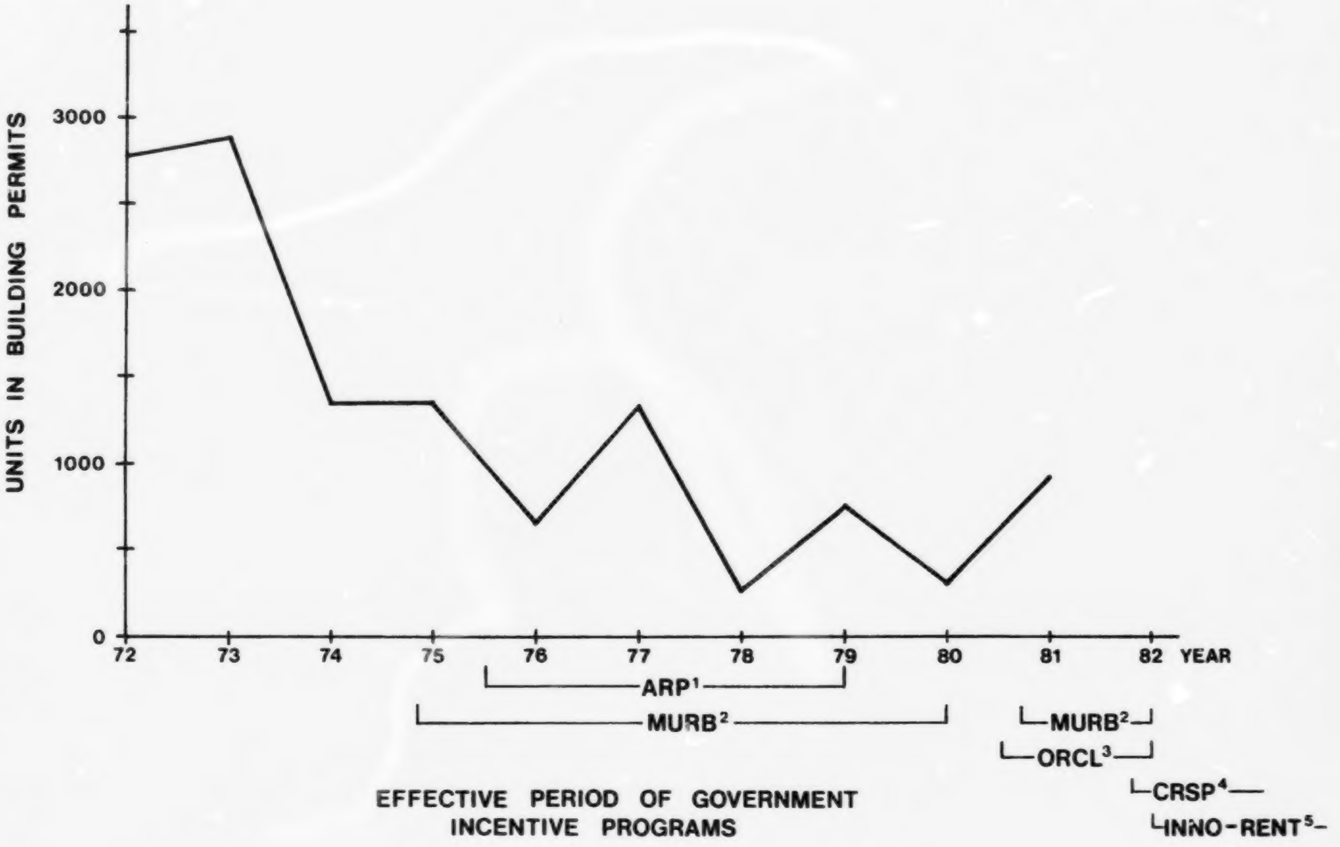
   Program provided a $1,000.00 grant for first time home buyers with a $250.00 supplementary grant on each anniversary date for the first two years following occupancy. This program was in effect from April 1975 to December 1975.

4. Ontario Renter Buy Program - Provincial

   Program provides up to $5,000.00 interest-free loans for second mortgages for purchase of new homes. Applications for assistance accepted until November 15, 1982.

FIGURE 8

GOVERNMENT INCENTIVE PROGRAMS FOR RENTAL UNITS
BY BUILDING PERMITS ISSUED 1972 - 1981
REGIONAL MUNICIPALITY OF WATERLOO



1. 'ARP' - Assisted Rental Program - Federal

   Program provided grants and loans to developers to make rental accommodation available to moderate income families. Program was in existence from June 1975 to December 1978.

2. 'MURB' - Multiple Unit Residential Building - Federal

   This program introduced special capital cost allowance tax rules to stimulate construction of rental residential buildings. Program was effective from November 1974 to January 1980 and October 1980 to January 1982.

3. 'ORCL' - Ontario Rental Construction Loan Program - Provincial

   This program provides up to $6,000.00 per unit in interest-free loans to stimulate rental residential construction.

4. 'CRSP' - Canada Rental Supply Program - Federal

   Provides interest-free loans of up to $7,500.00 per unit to promote rental residential construction in low vacancy areas. The program began in November 1981.

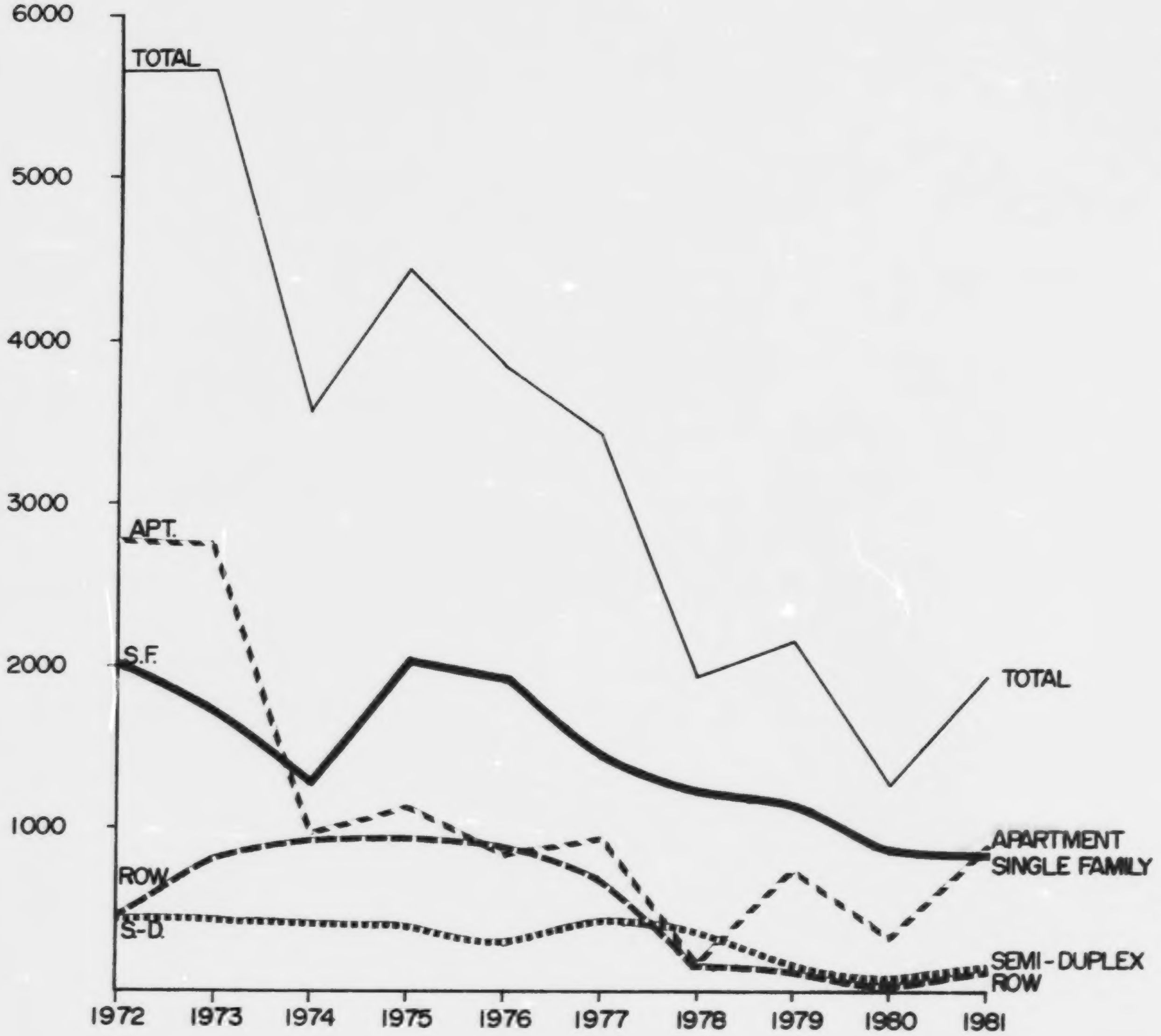
5. Inno-Rent Program - Provincial

   This program provides interest-free loans for eligible innovative residential construction or conversion to encourage construction of rental housing and to encourage employment in construction and related industries.

FIGURE 9

BUILDING ACTIVITY BY STRUCTURAL TYPE 1972 – 1981

REGION OF WATERLOO



steadily, these units comprised a larger proportion of units constructed in the 1978-1981 period than in the 1975-1978 period, as shown on Figure 10 Row housing construction was less than 1% of total units constructed in Kitchener in the 1979 to 1981 period. The construction of rental apartments has fluctuated widely declining to only 12 units in 1980 with a rebound to 520 units in 1981. This dramatic turnaround in apartment construction activity is attributable to the effects of the ORCL and MURB programs.

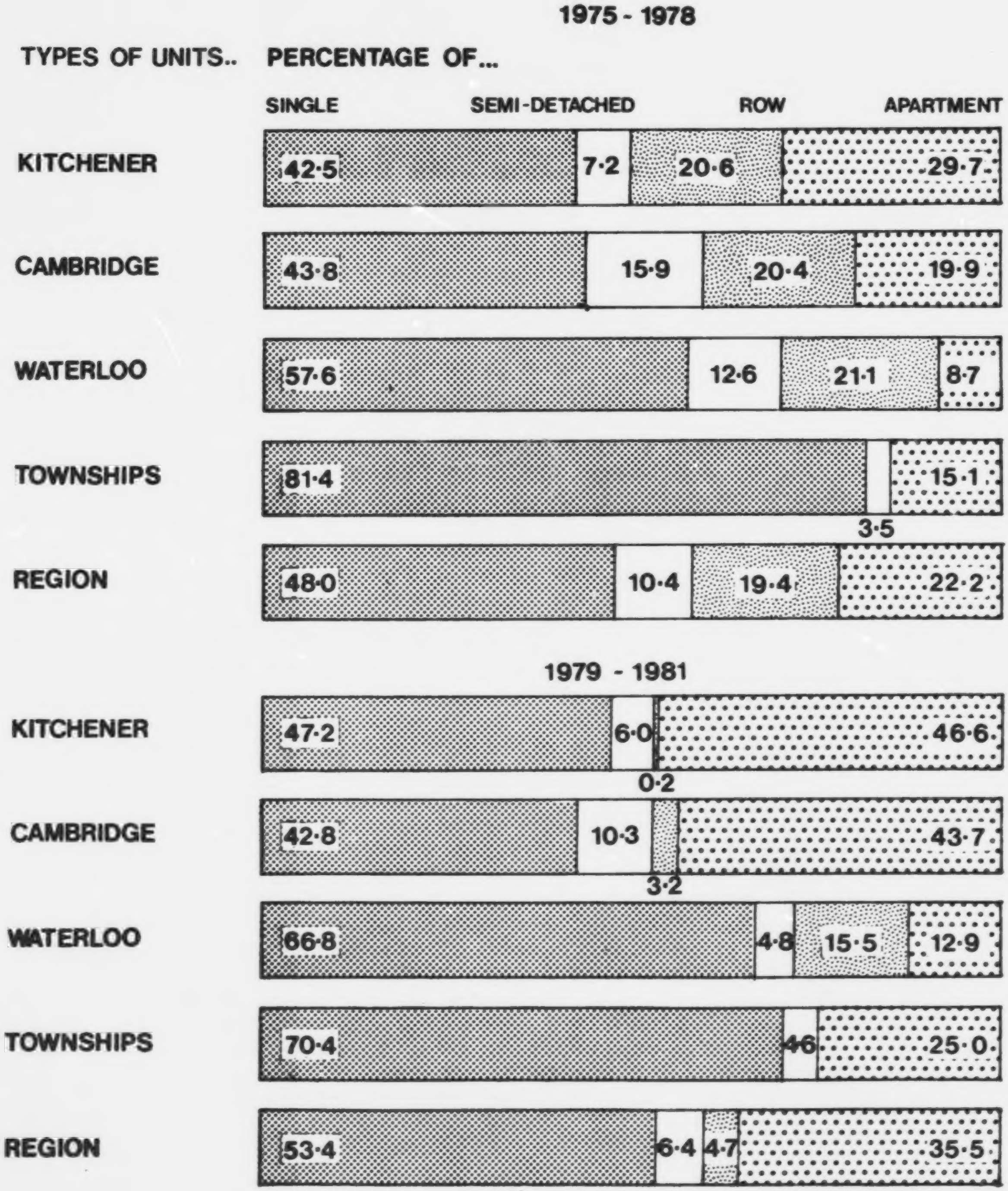
The City of Waterloo has experienced less dramatic changes in building activity on a year to year basis than other municipalities in the Region. Overall construction activity has ranged between 400 and 500 units annually since 1977. Single family detached construction has remained relatively stable at between 250 to 320 units annually in this time period. Figure 10 indicates that apartment construction activity in Waterloo was lower as a proportion of total building permits issued than in other municipalities in the 1979-1981 period and 1975 to 1978 period, thereby contributing to a low rental vacancy rate in Waterloo. Unlike Kitchener, Waterloo did not experience a significant increase in apartment construction activity in 1981 in response to the ORCL and MURB programs. However, commitments were made under the ORCL program to construct 234 additional apartment units in the 1982 to 1983 period.

Cambridge's housing construction market remained strong until 1977 achieving its peak output of 1,242 units in 1975. Construction declined dramatically in the 1978-1981 period to one-third of the levels achieved in the mid-1970's. Figure 10 indicates that as in Kitchener, rental apartment construction has formed a major portion of the residential units constructed in the 1979-1981 period. The construction of row townhouses declined to a minor position in the housing market between 1978 and 1981, with zero row units constructed between 1978 and 1980. In 1981, a commitment was made for the construction of 149 rental units in Cambridge under the ORCL program. These units will be constructed in the 1981 to 1983 period.

Figure 10

HOUSING TYPES - NEW UNITS

REGION OF WATERLOO



In the Townships, building permits issued also declined substantially from 1976 onwards. In Woolwich Township, building permits decreased from a high of 366 units in 1973 to 31 residential units in 1981. Wilmot's residential building permits declined from a high of 154 units in 1975 to 81 units in 1981. It is expected that with the expansion to the New Hamburg sewage treatment plant residential growth will increase in Wilmot Township in the 1980's. In Wellesley, residential units constructed has declined from 47 units in 1976 to 16 units in 1981. Residential building activity in North Dumfries has ranged from 15 to 20 residential units over the past five years but increased to 43 units in 1981, due to the construction of a senior citizens project in Ayr.

The construction of single family units has formed 100% of all units constructed in North Dumfries and Wellesley since the mid-1970's except for an 18 unit senior citizen rental project constructed in Wellesley in 1975 and a 30 unit senior citizens rental project constructed in North Dumfries in 1981. Wilmot (New Hamburg), on the other hand, experienced substantial apartment construction constituting 46% of all units developed in the last three years. Much of this rental construction was for senior citizen assisted rental apartment units. Woolwich Township in the early 1970's experienced substantial apartment construction. However, in the late 1970's and early 1980's almost all residential construction has been single family units.

iv) Current Supply of Residential Units

Completed and Unoccupied

The Regional Housing Studies in 1975 and 1978 indicated that on a regional basis, the housing market was oversupplied. Canada Mortgage and Housing Corporation (C.M.H.C.) statistics on completed and unoccupied units indicated 1,000 available residential units in April 1975 and 850 units in September, 1978. This situation has changed substantially, however, with 219 units completed and unoccupied in December 1981. (See Table 19). Contributing to this decline in completed and unoccupied units was a depressed housing market and a change in housing construction practices. High interest rates and economic uncertainty have reduced speculative building. Developers are unwilling and unable to carry large inventories of completed buildings awaiting sales.

TABLE 19

COMPLETED AND UNOCCUPIED

DECEMBER, 1981

Type of Unit	Kitchener					Cambridge					Waterloo					Kitchener Censue Metropolitan Area*				
	77	78	79	80	81	77	78	79	80	81	77	78	79	80	81	77	78	79	80	81
Single and Semi	254	210	106	67	56	73	79	44	52	19	92	70	68	70	33	419	359	218	189	108
Row and Apartment	238	145	74	77	22	155	37	7	0	45	16	13	26	48	44	409	195	107	125	111
TOTAL	492	355	180	144	78	228	116	51	52	64	108	83	94	118	77	828	554	325	314	219

SOURCE: Canada Mortgage and Housing Corporation.

* The Kitchener Census Metropolitan Area includes Kitchener, Cambridge, Waterloo, North Dumfries and Wilmot Township.

It should be noted that the completed and unoccupied units figure does not include C.M.H.C.'s vacant acquisitions. This was not a major factor in the past, but with C.M.H.C. acquiring ownership of condominium units originally financed under the A.H.O.P. program this now forms a significant vacant supply. As of December 31, 1981 C.M.H.C. had a total of 498 vacant units of which 399 were row condominium units. Canada Mortgage and Housing Corporation has been marketing these units as ownership units. Given our current low vacancy rates, perhaps these units should be considered for rental purposes.

Rental Vacancy Rates

The Region experienced a decline in overall apartment vacancy rates from 3.2% in April 1977 to 1.1% in October, 1981. Overall Apartment vacancy rate rose slightly in April 1982 to 1.4% in response to rental units being built under the O.R.C.L. program and a cyclical rise in the vacancy rate in April due to a decrease in student renters. In Canada Mortgage and Housing apartments survey, Waterloo, Kitchener and the Township reported vacancy rates of less than 1% in October, 1981 and Cambridge 1.6%. The City of Waterloo has consistently had the lowest vacancy rate in the Region over the past 5 years.

The 1975 Regional Housing Study identified a 3% vacancy rate as being acceptable for both renters and owners. Based on this criteria there is a need for additional rental units in all municipalities.

The availability of family rental units, identified as those rental units with two or more bedrooms, has declined steadily to only .1% in the Region in October, 1981, based on the Region's Apartment and Townshouse survey. Canada Mortgage and Housing Corporation reported a .7% vacancy rate for two bedroom units and 0.3% vacancy rate for three or more bedroom units in October, 1981 for larger apartment buildings. The low vacancy rates for family rental units, is distributed amongst the Region with all municipalities except Cambridge, reporting vacancy rates less than 1.0%. In Cambridge the vacancy rate for family units was approximately 1.6% in October, 1981.

Current vacancy rates and a projected decrease in probability of ownership households for all age groups to 1983 indicates a need for new rental units in all area municipalities. As of December, 1981 there were 903 row and rental apartment units under construction compared with 299 units under construction in December 1980. This increase in construction activity is largely attributable to government financial incentives under the ORCL and MURB programs. It should be noted that 59% of all row and apartment units currently under construction are located in Kitchener.

v) Land Supply

The inventory of vacant land in Registered and Draft Approved Plans of Subdivision at the end of 1981 would permit the development of 26,915 housing units with a potential for a further 9,973 units in pending plans. There is land within committed registered and draft approved plans of subdivision to accommodate the High forecast growth of 16,397 households within the Region between 1981 and 1986. The supply of land will not be a constraint on housing demand in the 1981-1986 period.

Table 20 compares the expected tenure split of the High forecast for household growth to 1986 with land supply.* For the Region there is an existing supply of both proposed ownership and rental units in committed plans of subdivision to accommodate the forecasted demand by tenure split to 1986.

Kitchener, Waterloo and Cambridge have adequate land supplies in committed plans, as shown on Table 20 to accommodate forecasted needs by tenure split to 1986. In addition to lands committed for residential development within subdivision plans, residential development in the urban areas will also occur on existing parcels of land within built-up areas. The potential for infilling or for rezoning to permit higher density development will further increase the potential land supply for residential development.

All of the Townships have adequate land supplies committed for ownership units. The Townships do not have sufficient land supply committed in subdivision plans to accommodate the expected rental demand to 1986. Table 20 indicates that only Woolwich Township has rental units in committed plans. It is, however,

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* Only the high forecast is compared here. Since there is sufficient land to meet the needs estimated for the High forecast in the short-run, this automatically applies to the Low forecast.

TABLE 20

COMPARISON OF FORECASTED SHORT-RUN HOUSEHOLD GROWTH AND LAND SUPPLY

1981 to 1986

Municipality	Housing Demand to 1986, High Forecast Tenure	Land Supply, December 31, 1981 Committed Plans Registered and Draft Approval Plans Tenure
Kitchener	4,837 Ownership [1] 2,868 Rental [2]	4,749 Ownership [1] 9,731 Rental [2]
Cambridge	2,555 Ownership 1,185 Rental	3,859 Ownership 1,636 Rental
Waterloo	2,548 Ownership 1,322 Rental	3,121 Ownership 1,880 Rental
Woolwich	360 Ownership 70 Rental	458 Ownership 23 Rental
Wilmot	285 Ownership 50 Rental	137 Ownership 0 Rental
Wellesley	170 Ownership 20 Rental	289 Ownership 0 Rental
North Dumfries	105 Ownership 20 Rental	363 Ownership 0 Rental
REGION	10,860 Ownership [1] 5,535 Rental [2]	13,036 Ownership [1] 13,879 Rental [2]

1 - Includes Single-family and Semi-detached Units

2 - Includes row and apartment units

important to note that most rental units constructed in the Townships are not developed through subdivision plans. Multiple unit rental buildings in the Townships usually occur within the built-up areas of larger settlements and are developed through zoning amendments and site plan agreements rather than as part of larger subdivisions. The potential for rental unit development is likely understated by the supply in subdivision plans.

An additional supply of residential units in the Townships occurs through land severances. Parcels of land created through the land severance process in the Townships are used primarily for the development of ownership units.

vi) Summary and Conslusions: Demand and Supply

This study forecasts an increase of 16,397 households in the Region (assuming a 12,000 migration figure) or 13,892 households (assuming a 5,000 migration figure) between 1981 and 1986. Given the present economic environment in this Region, it appears that the Low Forecast (5,000 migration) is more realistic. It has been concluded that sufficient land exists within committed subdivision plans, to accommodate this growth, with some exceptions in the Townships. In addition, the local building industry has sufficient capacity to meet expected household growth through to 1986. However, there may be difficulty in delivery of rental housing. The High and Low Regional forecasts show a growth in rental households of 5,535 and 4,476 respectively between 1981 and 1986. With a Regional vacancy rate of approximately 1.4% in April, 1982 these households can only be accommodated by additional rental construction. In 1982 and 1983 approximately 1,385 rental units will come on stream as a result of the Ontario Rental Construction Loan Program. In addition there will likely be 150 non-profit senior citizen units developed in 1982. It appears that the majority of rental construction will only occur as a result of government incentives. Without this form of stimulus, it is unlikely that sufficient rental units can be developed to accommodate the forecasted household growth through the 1986 period.

In general then, forecasted annual housing unit requirements are within the capacity of the areas' development industry. However, government incentives will be necessary in order to produce sufficient rental units in order to meet the expected demand for rental housing. This demand could be tempered somewhat by the $5,000 interest free loan available to first time home buyers under the recently announced provincial Ontario Renter-Buy Program and the $3,000 grant to home buyers under the federal Canadian Home Ownership Stimulation Plan.

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GLOSSARY OF TERMS

Census Family consists of a husband and a wife (with or without children who have never married, regardless of age) or a lone parent, regardless of marital status, with one or more children (who have never married, regardless of age) living in the same dwelling. Persons living common-law are directed to report as now married on the census questionnaire. Such persons are, therefore, indistinguishable from those who are legally married and will appear as a husband-wife family in the census reports.

Dwelling Unit is a set of living quarters which is structurally separate and has a private entrance outside the building or from a common stairway or hall inside, i.e., the entrance must be one which can be used without passing through anyone else's living quarters.

Expenditure to Income Ratio (Renters) is the total amount paid for gross rent (cash plus any additional payments for utilities and services) divided by gross family income.

Family Household refers to a household that contains at least one census family. One-Family Household refers to a single census family that occupies one private dwelling. The family may be that of the household head or one living as a related, lodging or other type of family with a household head who is a non-family person. A Multiple-Family Household is one in which two or more census families occupy the same private dwelling. One family may be that of the household head, or the household head may be a non-family person with whom two or more census families are residing.

Head of Household:

For census purposes, every household has a head and only one person is so designated. This is either the husband or the wife; the parent where there is one parent only, with one or more children (who have never married, regardless of age); or any member of a group sharing a dwelling equally. A person occupying a dwelling alone is always reported as the head. The minimum age for the head of household is 15 years.

Household refers to a person or group of persons who occupy a dwelling and do not have a usual place of residence elsewhere in Canada. It usually consists of a family group with or without lodgers, employees, etc. However, it may consist of two or more families sharing a dwelling, a group of unrelated persons, or one person living alone.

Household Size is the total number of persons in the household.

Housing Demand is defined here as the growth in households over a defined period. In forecasting housing demand economic and social factors are taken into account as well as changes in population.

Housing Needs is the probable growth in households over a defined period where there is no significant economic constraint on the growth in the number of households. In forecasting housing needs social factors are taken into account as well as changes in population.

Non-Family Household refers to one person who lives alone in a private dwelling, or to a group of persons who occupy one private dwelling and do not constitute a census family.

Percentage Probability of Household Formation refers to the likelihood of a person in a specified age category of forming a separate household.

Real Income refers to the actual rise in incomes after discounting the rate of inflation.

APPENDIX A

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Real Income refers to the actual rise in incomes after discounting the rate of inflation.

THE REGIONAL MUNICIPALITY OF WATERLOO

Staff Report

To

Planning and Development Committee

COMMISSIONER - BILL THOMSON

SUBJECT:	2001 Regional Population Forecast, Regional Municipality of Waterloo
NUMBER:	PD 22/80
DATE:	February 27, 1980

INTRODUCTION:

The Regional Official Policies Plan contains a commitment to annually review population trends in the Region as well as outside pressures on Regional population growth in order to determine the consequences of forecasted growth.

Since approval of the Regional Official Policies Plan in December 1976, Regional staff have submitted two such reviews to Planning and Development Committee, the first in 1977 [1] and the second in 1978. [2] The present report for 1979 is the third such report and continues the process of review in the light of recent population figures from the 1979 assessment.

Since the preparation of the first Regional population forecasts in 1976 several of the underlying factors determining population size and composition have changed dramatically. The technique which has been used for forecasting population relies on three critical determining factors, each of which is influenced by a number of related social, economic, political and psychological factors. These prime factors are:

Birth Rates: Births per 1000 women of child-bearing years, defined as females between 15 and 49 years of age.

Death Rates: Deaths per 1000 population by five year age groupings.

Net Regional Migration: Net inflow-outflow of migrants into and out of the Regional Municipality for each time period.

The future behaviour of these factors cannot be determined exclusively on the basis of past trends, and "informed judgment" must be introduced to predict future conditions.

1/ PD 23/77, Regional Population Forecasts, March 7, 1977

2/ Population 1976-2001
Regional Planning and Development Series, Sept. 1978

PREVIOUS FORECASTS AND THEIR ASSUMPTIONS

Population forecasts presented in the Regional Official Policies Plan established a probable 2001 Regional population of between 614,600 and 531,200. These high and low projection estimates (Table 1) were based on birth rates as shown in Appendix 1, Table 1 and reflected Regional Council's decision that there be no arbitrary restrictions on growth to 1981, and therafter growth be limited to 2.5% per annum. The assumptions on net migration into the Regional Municipality ranged from 25,000 in 1971-76 to 12,000 in 1996-2001. 1/

In 1977, following release of 1976 data from the Census of Population, two facts became apparent. Firstly, the birth rate for the 1971-1976 period was lower than that previously assumed. Secondly, the actual volume of net migrants into the Regional Municipality between 1971 and 1976 was nearer to 21,000 than 25,000. On both accounts theretore, assumptions on birth rates and migration had to be adjusted accordingly. The revised birth rates are shown in Appendix 1, Table 2 which assumed a turnaround in birth rates in the post 1976 period. Based on these revised assumptions a new population forecast resulting in an estimated 2001 population of 539,887 was prepared (Table 1).

Results of the Ministry of Revenue population figures for 1976 and 1977 and released in 1978 showed that the birth rates which had been forecasted for the Regional Municipality were not emerging as expected and also that the actual levels of migration into the Regional Municipality were lower than forecasted. Based on both of these trends Regional staff decided to postpone the slight turnaround in the birth rate from the 1976 to 1981 period to the 1981-1986 time period as shown in Appendix 1, Table 3 and to reduce the previous migration assumption downwards (Appendix 2). These revisions gave a 2001 population for the Regional Municpality of 509,942 persons and were reported in September 1978. 2/ (Table 1)

1/ Regional Official Policies Plan. Appendix. Chapter 3

2/ Publication No. 1 Population 1976-2001
Regional Planning and Development Series, Sept. 1978

TABLE 1

COMPARATIVE POPULATION PROJECTIONS

	1971	1976	1981	1986	1991	1996	2001
I	254,030	297,810	351,500	412,100	478,000	546,400	614,600
II	254,030	297,200	337,500	390,500	439,400	486,200	531,200
III	254,030	294,162	339,583	387,412	439,141	490,343	539,887
IV	254,030	290,602	331,203	372,813	418,600	464,015	509,942

I = Regional Official Policies Plan (High Forecast)

II = Regional Official Policies Plan (Low Forecast)

III = Refined Regional Official Policies Plan (PD 23/77)

IV = Regional Planning and Development Series
Report No. 1 Population. September 1978

It should be noted that the population data on which these projections were based came from the Canada Census of Population tabulations for the Regional Municipality of Waterloo. This poses some problems. The Census traditionally occurs as of the first day of June in the appropriate year. However, on that date most of the university students studying in the Regional Municipality but whose permanent home address is outside the Region, would not be around to be counted because of summer vacations. This is an important qualifier because in this Regional Municipality there are two universities which have a distinct impact. For planning purposes and in terms of student population impacts on transportation systems, off-campus housing, water consumption, treatment of sewage effluent and solid waste disposal, shopping and personal service facilities and recreational areas to name a few, this difference cannot be ignored.

THE PROVINCIAL PROJECTION

During 1979, Regional staff maintained a close liaison with the staff of the Ontario Statistical Centre in order to obtain as much information as possible on the assumptions of that agency for future population trends in Ontario generally, and for the Regional Municipality of Waterloo in particular. Regional staff attended a seminar in May 1979 where the Provincial Government assumptions were discussed and circulated. Subsequently staff obtained on a special request the detailed fertility, mortality and migration assumptions applicable to the Regional Municipality of Waterloo.

TABLE 2

PROVINCE OF ONTARIO PROJECTIONS
FOR THE
REGIONAL MUNICIPALITY OF WATERLOO

	1976	1981	1986	1991	1996	2001
Ontario Statistical Centre	289,129	325,871	362,248	397,179	429,893	460,205

Table 2 above is the current "most likely" population forecast for the Regional Municipality of Waterloo as prepared by the Ontario Statistical Centre.

The methodology adopted by the Province forecasts population for Ontario and thereafter distributes the Provincial total among member Counties and Regions. The forecasts by Regional staff look at the Waterloo Region primarily. This difference in methodology could account for some differences in results. Also, the Provincial projection is based on an average net immigration of about 13,000 persons per five year period and the total fertility rate was assumed to continue falling from 1.8 in 1976 to 1.5 in 2001.

Following publication of the 1979 Assessment Population figures for the Regional Municipality of Waterloo of 300,719 it became evident that the Ontario Statistical Centre 1981 projection of 325,871 would not be attained. This was due primarily to a fall-off in migration into the Region. If the migration rate between 1976-1979 were extended to 1981 the derived migration over the five year period was to be only 5,000 persons - as compared with nearly 20,000 in the 1971-1976 period. An indepth look was required.

1980 REGIONAL POPULATION PROJECTIONS

The population picture within Waterloo Region is changing much more quickly than previously assumed. Recent population figures lead to the conclusion that new residents are not moving to the Region in the numbers they previously did, nor as expected, and also that existing residents are moving away in numbers never previously contemplated.

Other major variables contributing to growth are fertility and mortality. It is now expected that the number of births per 1,000 women of childbearing years (fertility), will slowly level off and show some slight increases due to a combination of age composition of the population, economic and social factors. Due to continuing improvements in medical care, nutrition, etc., the mortality rate is expected to continue to decline.

This Regional Municipality also possesses considerable growth advantages and the history of the area demonstrates a strong relationship between economic growth and immigration and this can affect our population projections.

Migration

Migration into and out of the Regional Municipality of Waterloo is directly influenced by economic opportunities and the quality of life in the Region. Simultaneously, decisions to migrate are influenced by competing opportunities elsewhere. Migration will also be determined by national policies to relax or to restrict admittance into the country. We have assumed that the current economic slump within the Regional Municipality will continue at least to 1981. This is based on the continuing effects of the Provincial economic slump which affects expansions and curtails new investments. These assumptions are also based on reports by the Conference Board and other economic agencies and government departments.

However, because of the advantages of location to existing large markets, a diversified economic base, and the ability to service the emerging designated growth centres in Southern Ontario such as Nanticoke and Douglas Point, a slight increase in the economy particularly in the service industrial sector within this Regional Municipality, may be possible between 1981-1986.

A modest increase in growth need not be due to an influx of new residents from outside the Region to areas within the Region. It could equally be due to improved opportunities for job seekers within the Region resulting in them remaining rather than moving away in search of employment. However, this can only be accomplished if first our Province manages to slow its economic decline which will be difficult as we are tied so closely to our southern neighbour and the economic situation federally. But it is not entirely the responsibility of the Province to look after each municipality and so they too must take strong concerted action. If the Provincial economy does not improve after 1981, then even with the best efforts at the municipal levels, the necessary economic growth will not be generated and the projected migration assumptions will not be valid and this holds true for this Regional Municipality as well.

After 1986 the pattern of migration will be due principally to whether or not a general economic recovery occurs, and whether or not the Area Municipalities individually or even together, can take advantage of any opportunities which might arise.

For purposes of projecting we have assumed that if the above discussed conditions occur and if all required facilities are in place then the Area Municipalities could, starting in 1986, experience a modest increase in migration levels.

If economic conditions as indicated above do not materialize, the effect of these assumptions is to postpone further into the future, the benefits derived from planning for these target populations and the Region will not meet the 2001 projections assumed.

It is not particularly wise to project too low because if economic assumptions do take place and our projections are low then the staging and development of all major services will be retarded and needed capacities not available when needed leading to major problems in financing and taking advantage of any new job opportunities that could be available.

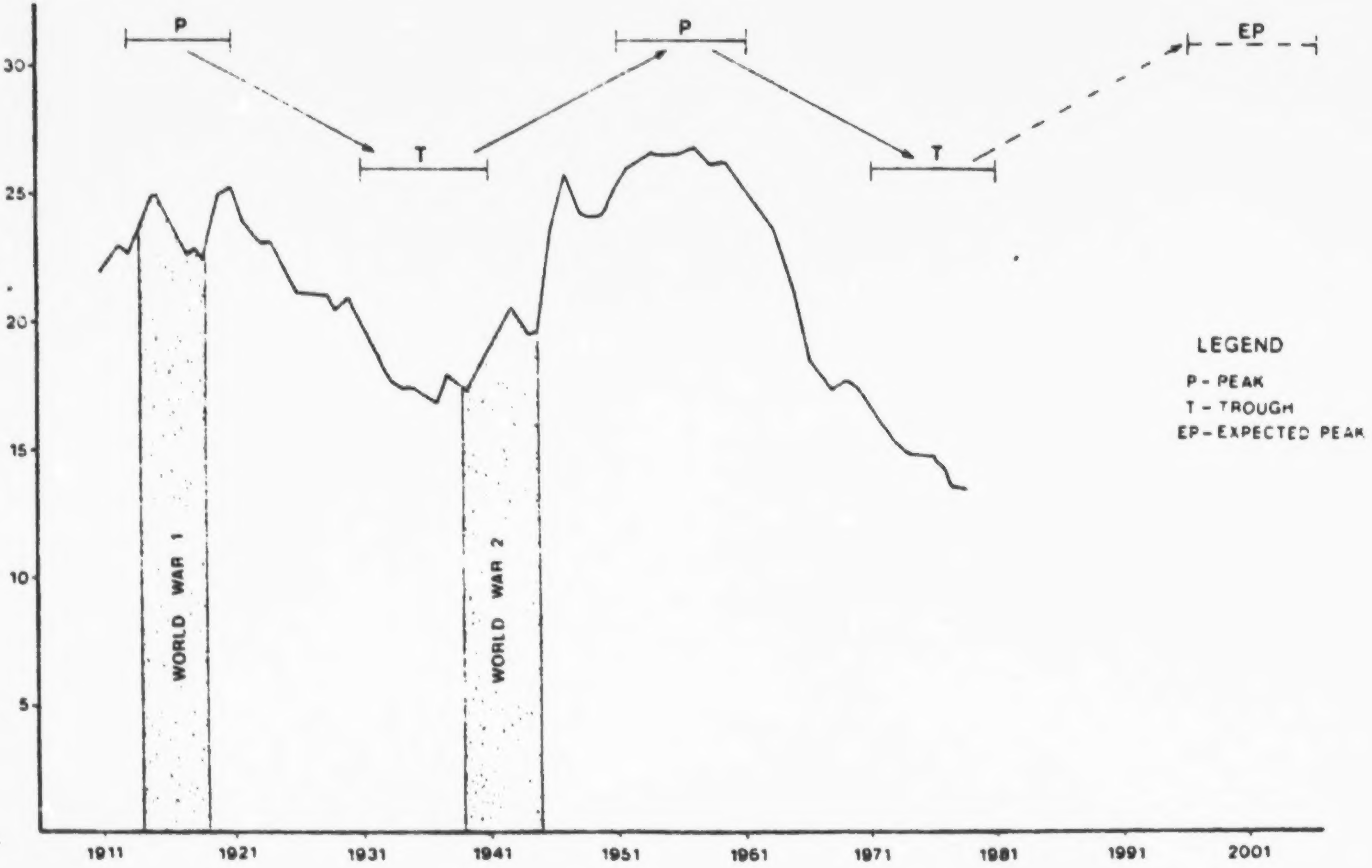
The migration assumptions used in these forecasts are shown in Appendix 2.

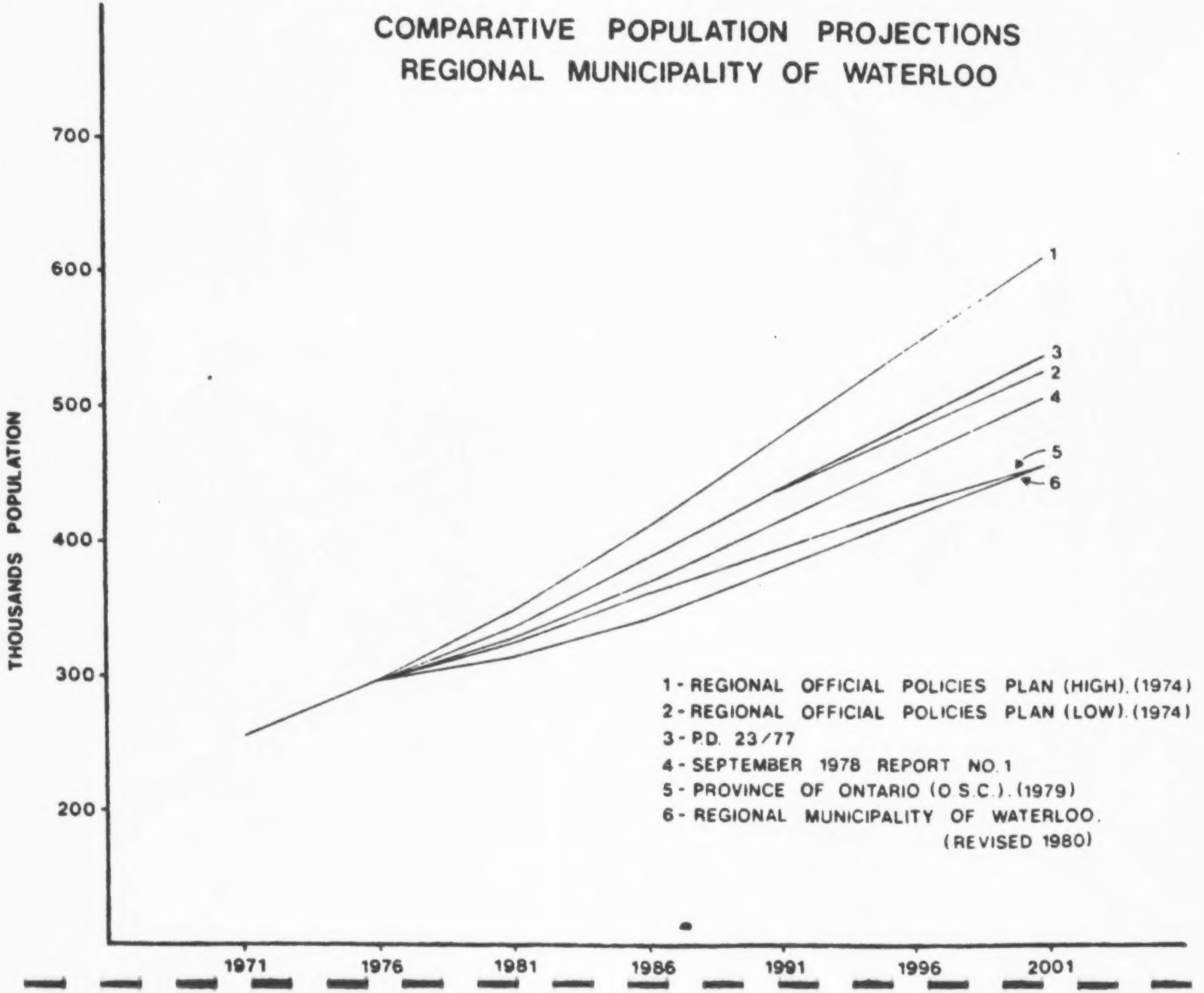
Revised Fertility Assumptions

Trends in the number of births per 1000 women of childbearing years (fertility) are as much due to social factors as to economic factors. For example, if it is necessary for housewives to enter the labour force in order to maintain real family incomes in the face of inflation then one can expect the birth rate to decrease as Ontario and indeed Canada is now experiencing. If however, the decision of potential parents to have children is influenced by the pressures being experienced in establishing themselves in a job or at home then they could transmit that insecurity by not having children as is being suggested by leading sociologists in our Country as one of the reasons for the declining birth rate. Consequently, on this principle, where there is a surplus labour force there will be a lower birth rate and where there is a labour deficit there could be a higher birth rate. This pattern of "peaks and troughs" in the birth rate

ONTARIO: BIRTH RATE 1911 - 1977

BIRTHS / 1000 POPULATION





COMPARATIVE POPULATION PROJECTIONS
REGIONAL MUNICIPALITY OF WATERLOO

which tends to occur on a generation by generation cycle is shown in Figure 1 and the basis for a turnaround assumption in the post 1986 period can be foreseen if past trends show up again in the future.

There are of course several other related issues which affect birth rates.

These include:

- Marriage and divorce rates
- Family Law changes
- Community involvement in child care and welfare programs
- Employment codes allowing employees to leave and re-enter the labour force without penalty for maternity purposes
- Social attitudes to the family

The importance and impacts of these cannot be plugged into a model yet they have profound implications for emerging trends in population and ones which we must constantly monitor in order to keep our projections up to date.

The fertility assumptions now being used are set out in Appendix 1, Table 4 and are very close to present Provincial assumptions up to 1981. After 1986, Regional staff have assumed a slight turnaround in fertility for the reasons explained above but as mentioned previously, if the economic situation continues we must make adjustments annually.

Death Rates

Death rates and the effects of improvements in health care have been accommodated into the model using existing Provincial assumptions for Ontario, without modification. (Appendix 3)

Results of these assumptions applied to the Waterloo Region Cohort Survival Model 1/ is shown below.

1/ Please see Appendix 4 for a brief explanation of the operation of the model, its data requirements and the Cohort Survival technique.

TABLE 3

REGIONAL POPULATION FORECAST 1976 - 2001

	1976	1981	1986	1991	1996	2001
Revised Forecast 1980	289,125	312,220	342,404	381,908	421,498	460,442

This revised forecast places the 1981 population forecast of 312,220 much more realistically in terms of the 1979 population levels from the Ministry of Revenue.

Up to 1986, the forecasts of population are presented with much more confidence than those after 1986. However, even here, between 1981 and 1986 the groundwork must be laid to arrest the outflow of job-seekers by providing a wider range of job opportunities or the 1986 population projection will not be reached.

After 1986 the projection is presented as a guide since it will be considerably affected by Provincial and Federal policies on the economy and migration, as well as specific investment policies to designated areas by Senior levels of Government, such as to Western Canada by the Federal Government and Nanticoke and other areas by our Province.

AREA MUNICIPALITY ALLOCATIONS

The revised population forecasts have been distributed among the seven Area Municipalities bearing in mind the 1976-1979 share each Municipality had of the Regional total, the recent rate of growth of each Municipality, and the recent levels of building permits issued, particularly in the Townships.

TABLE 4

REGIONAL POPULATION BY MUNICIPALITY
1976 - 2001

	1976	1981	1986	1991	1996	2001
Cambridge	72,385	78,662	85,304	95,926	106,421	116,736
Kitchener	131,870	138,826	153,274	172,193	191,032	209,032
Waterloo	46,625	55,645	63,381	71,182	78,970	86,624
North Dumfries	5,054	5,000	5,088	5,328	5,568	5,808
Wellesley	6,415	6,891	7,289	7,884	8,479	9,074
Wilmot	10,560	10,846	11,187	11,847	12,507	13,167
Woolwich	16,240	16,350	16,881	17,896	18,891	19,896
	289,125	312,220	342,404	381,908	421,494	460,462

With reference to an adjustment for student population, Regional staff conducted a sample survey of university students by place of residence in order to determine in which municipalities they should be placed. Students giving a Regional Municipality of Waterloo address as their permanent address were not sampled since it is assumed that they would have been enumerated in the Census of Population and thus be already included. Based on this survey an additional population of 10,216 students should be added to the City of Waterloo population and 2,458 students should be added to the City of Kitchener population. As a Community College it was assumed that the vast majority of students at Conestoga College were resident at home, and because of this no adjustment was considered necessary.

Regional staff were advised that neither university envisaged major increases in the level of student enrollment in the future. For purposes of projections, the present distribution of the student population was carried through to the year 2001.

TABLE 5

REGIONAL POPULATION BY MUNICIPALITY
(INCLUDING UNIVERSITY STUDENTS)
1976 - 2001

	1976	1981	1986	1991	1996	2001
Cambridge	72,385	78,662	85,304	95,926	106,421	116,736
Kitchener	134,328	141,284	155,732	174,651	193,490	211,490
Waterloo	56,841	65,861	73,597	81,398	89,186	96,840
North Dumfries	5,054	5,000	5,088	5,328	5,568	5,808
Wellesley	6,415	6,891	7,289	7,884	8,479	9,074
Wilmot	10,560	10,846	11,187	11,847	12,507	13,167
Woolwich	16,240	16,350	16,881	17,886	18,891	19,896
	301,799	324,894	355,078	394,582	434,168	473,136

It must be emphasized that when comparing these projections to results from either the Census or the Assessment Division of the Ministry of Revenue, reference should be made to the projection which excludes University Students. However, the above table will be used in future planning within the Regional Municipality of Waterloo.

The next step is to redistribute the municipal projections into the many traffic zones as part of the input required to re-project the need and timing of regional road construction and widenings as well as re-project our water and sewer requirements. These projections are also utilized by School Boards, Utility Companies, Area Municipalities, the Development Industry and others. A following report on industry will fill in another data gap for the traffic zones - job opportunities and locations as well as new economic activity locations.

SOME POSSIBLE IMPLICATIONS TO CONSIDER

1. A basic objective of planning is to maintain and improve the quality of life available to residents of all municipalities within the Regional Municipality of Waterloo Planning Area. A major part of this requires that the community as a whole maintains its vibrant, dynamic and progressive attitude. This requires that residential, employment opportunities and leisure and educational activities are made available to meet the needs of existing and new residents. The necessity of too many young people having to move away in search of employment must be considered seriously. Current population trends show that this outflow of young residents, particularly first time job seekers, is occurring at an unprecedented rate and that this is principally due to a fall-off in job opportunities in the Region.

2. Studies show that of all Regions and Counties in Ontario which experienced a high rate of growth due to inflow of migrants between 1961 and 1976 only in the cases of the Regional Municipalities of Ottawa-Carleton, Waterloo and Niagara and the Counties of Middlesex and Wellington, could it be said that this attraction was essentially generated by internal growth as opposed to bedroom type development. (Appendix 5). There are therefore, natural advantages within this Region which can be exploited to at least maintain those opportunities and amenities which obviously affect population projections.

3. Present short term economic forecasts done by private and public experts at the Provincial and Federal levels, show that for Ontario as a whole there will be a falling-off in investment opportunities. However, specific areas in Ontario will likely not experience this decline to the same extent as others such as the Haldimand-Norfolk Area and Mississauga, due to many factors. Developments at Stelco and Ontario Hydro at Nanticoke and in the Peel Region for example, could influence a growth impetus in Southwestern Ontario and Municipalities in this Region, if ready to seize such opportunities can influence our population projections.

4. If Municipalities in this Region are unable for any reason to capitalize on these and other opportunities when they present themselves, the reputation of the Municipalities in the Region as dynamic and progressive could slip leading to a worsening economic situation as we get by-passed. We hasten to state however, that economic growth is only one important index of community health. We are only suggesting

that if opportunities do come to Ontario and to this general Region, we all must be ready to move quickly and if we manage to grasp the opportunities, if they come, then we can only realistically hope to maintain a stable economic growth at best. Considerable effort will be required by all concerned to get the Regional Municipality as a whole back to the modest growth experienced in the recent past.

5. Generally, the majority of Municipalities in the Regional Municipality appear well prepared to meet the residential land development requirements for any projected population. Attention is being given to resolving various servicing constraints being faced within the Regonal Municipality such as sewage plants in Elmira, New Hamburg and Ayr and future water requirements for Kitchener-Waterloo and with decisive action, solutions will be found for the short term as well as the long term. Recreational, commercial and institutional facilities are largely in place to meet foreseeable needs. The reservoir and tradition of skills, business services and diversified economic activities can be expanded as required. All this will influence population projections.

6. The population as we projected several years ago is still aging and the implications for increased social costs and varying markets for older populations are still pronounced.

7. The declining enrollments in the junior school years will still continue into the foreseeable future.

8. The number of people in the labour force will commence their decline in the next 5-10 years and unemployment declines will quickly follow which may bring shortages in specific areas of the labour force in the 1990's. This will affect industry and technology to handle a smaller labour force.

9. The retirement age at 65 will soon be eliminated.

10. Housing requirements are changing due to the changing population characteristics, mainly due to a lower household number, and which will again be influenced by energy conservation planning practices relative to housing density and design.

All of the above require constant monitoring and re-projecting because every physical land use, economic, social and cultural function and their projections are influenced even by minor changes in population characteristics and numbers.

This report was mainly researched and analysed by F. Watty with considerable input by the other Senior Staff, including the Directors and Commissioner.

Recommended By:

G.A. Thompson, M.C.I.P., P.Eng.
Director of Planning and
Transportation

Approved By:

Bill Thomson

Bill Thomson, M.A., M.C.I.P.
Commissioner of Planning
and Development

APPENDICES

APPENDIX 1. Fertility Assumptions

2. Comparative Migration Assumptions

3. Mortality Assumptions

4. The Cohort Survival Model

5. Migration Share of Growth
- Selected Counties and Regions

APPENDIX 1

FERTILITY ASSUMPTIONS

BIRTHS PER 1000 WOMEN PER YEAR OF CHILDBEARING YEARS

1. Regional Official Policies Plan

	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1971-1976	37.9	152.3	142.2	81.9	37.8	10.7	1.5
1976	45.5	163.2	157.3	93.4	50.2	13.5	1.5
1981+	50.5	175.0	165.0	100.0	55.0	15.0	1.5

2. Regional Population Forecasts (PD 23/77)

	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1971-1976	41.5	123.6	136.5	71.2	26.5	6.1	0.3
1976-1981	42.5	125.5	140.5	75.5	26.5	6.1	0.3
1981-1986	44.5	137.5	150.5	85.5	31.5	6.5	0.3
1986-1991	48.5	149.5	165.5	80.5	33.5	7.5	0.3
1991-1996	50.0	153.5	170.5	92.0	33.5	7.5	0.3
1996-2001	50.0	153.5	170.5	92.0	33.5	7.5	0.3

3. Population 1976-2001. Regional Planning and Development Series Report No. 1

1971-1976	41.5	123.6	136.5	71.2	26.5	6.1	0.3
1976-1981	41.5	123.6	136.5	71.2	26.5	6.1	0.3
1981-1986	42.5	125.5	140.5	75.5	31.5	6.5	0.3
1986-1991	44.5	137.5	150.5	85.5	33.5	7.5	0.3
1991-1996	48.5	149.5	165.5	90.5	33.5	7.5	0.3
1996-2001	50.0	153.5	170.5	92.0	33.5	7.5	0.3

4. Assumption January 1980 .

1976-1981	39.82	117.4	120.02	54.58	22.46	6.08	0.7
1981-1986	37.36	112.5	114.84	52.18	21.38	6.02	0.68
1986-1991	39.24	115.7	118.3	54.18	22.14	6.0	0.68
1991-1996	40.54	119.54	122.2	55.98	22.88	6.2	0.72
1996-2001	41.86	123.44	126.2	57.8	23.62	6.4	0.74

APPENDIX 2

COMPARATIVE MIGRATION ASSUMPTIONS

	REGIONAL PLAN		PD 23/77	POPULATION 1976-2001	POPULATION PROJECTIONS 1980
	HIGH	LOW			
1971-76			21,309	18,000	-
1976-81			21,309	18,000	5,000
1981-86			18,000	16,000	12,000
1986-91			18,000	16,000	20,000
1991-96			16,000	14,000	20,000
1996-2001			16,000	14,000	20,000

APPENDIX 3

MORTALITY ASSUMPTIONS

ASSUMPTIONS

SURVIVORSHIP MALE

	1976.	1981.	1986.	1991.	1996.
0. TO 4.	0.9975	0.9977	0.9980	0.9981	[illegible]
5. TO 9.	0.9990	0.9990	0.9991	0.9991	[illegible]
10. TO 14.	0.9987	0.9987	0.9933	[illegible]	[illegible]
15. TO 19.	0.9952	0.9952	[illegible]	[illegible]	[illegible]
20. TO 24.	0.9944	0.9944	0.9944	0.9944	[illegible]
25. TO 29.	0.9957	0.9957	[illegible]	[illegible]	[illegible]
30. TO 34.	0.9954	0.9954	[illegible]	[illegible]	[illegible]
35. TO 39.	0.9920	0.9920	[illegible]	[illegible]	[illegible]
40. TO 44.	0.9873	0.9870	[illegible]	[illegible]	[illegible]
45. TO 49.	0.9805	0.9807	[illegible]	[illegible]	[illegible]
50. TO 54.	0.9667	[illegible]	[illegible]	[illegible]	[illegible]
55. TO 59.	0.9474	0.9475	[illegible]	[illegible]	[illegible]
60. TO 64.	0.9137	0.9139	[illegible]	[illegible]	[illegible]
65. TO 69.	0.8724	0.8733	[illegible]	[illegible]	[illegible]
70. TO 74.	0.8125	0.8127	[illegible]	[illegible]	[illegible]
75. TO 79.	0.7395	0.7394	[illegible]	[illegible]	[illegible]
80. TO 84.	0.6370	0.6371	[illegible]	[illegible]	[illegible]
85. TO 99.	0.4415	0.4415	[illegible]	[illegible]	[illegible]

SURVIVORSHIP FEMALE

	1976.	1981.	1986.	1991.	1996.
0. TO 4.	0.9979	[illegible]	[illegible]	[illegible]	[illegible]
5. TO 9.	0.9992	[illegible]	[illegible]	[illegible]	[illegible]
10. TO 14.	0.9992	[illegible]	[illegible]	[illegible]	[illegible]
15. TO 19.	0.9983	[illegible]	[illegible]	[illegible]	[illegible]
20. TO 24.	0.9985	[illegible]	[illegible]	[illegible]	[illegible]
25. TO 29.	0.9975	[illegible]	[illegible]	[illegible]	[illegible]
30. TO 34.	0.9972	[illegible]	[illegible]	[illegible]	[illegible]
35. TO 39.	0.9957	[illegible]	[illegible]	[illegible]	[illegible]
40. TO 44.	0.9935	[illegible]	[illegible]	[illegible]	[illegible]
45. TO 49.	0.9902	[illegible]	[illegible]	[illegible]	[illegible]
50. TO 54.	0.9842	[illegible]	[illegible]	[illegible]	[illegible]
55. TO 59.	0.9762	[illegible]	[illegible]	[illegible]	[illegible]
60. TO 64.	0.9650	[illegible]	[illegible]	[illegible]	[illegible]
65. TO 69.	0.9403	[illegible]	[illegible]	[illegible]	[illegible]
70. TO 74.	0.9140	0.9137	0.9431	[illegible]	[illegible]
75. TO 79.	0.8634	0.8675	[illegible]	[illegible]	[illegible]
80. TO 84.	0.7519	0.7649	[illegible]	[illegible]	[illegible]
85. TO 99.	0.5554	0.5677	[illegible]	[illegible]	[illegible]

APPENDIX 4

REGIONAL MUNICIPALITY OF WATERLOO

POPULATION PROJECTION METHOD

COHORT-SURVIVAL TECHNIQUE

1. Program Description

The program is designed to project future populations from existing male and female populations by taking into account fertility rates, mortality rates and migration trends. The base population is divided into male and female populations and distributed by age category. For each five year population projection required, fertility rates are provided for all female categories, migration rates are divided into male and female groups and are inputted by age category, as are survivorship factors.

The program first takes the female base population and calculates estimated births and divides this into male and female births, taking into account survivorship factors. For both male and female categories for the base population, calculated mortality numbers are subtracted and migration numbers are added. The new population numbers generated for each age category are the population distribution for the first five year projection and now form the base population for the next five year projection. This process continues until all five year projections for which data has been inputted have been satisfied.

Data Input

- male population by age group for the base year (M)
- female population by age group for the base year (F)
- male survivorship factors for each age category for the base year and for each five year forecasted period (S.F.)
- estimated fertility rates for each age group of females for the base year and for each forecasted year (B.R.)
- estimated male migration numbers by age group for each five year forecasted period (MMIG)
- estimated female migration numbers by age group for each five year forecasted period (FMIG)
- ratio of male to female births for each forecasted period (Factor)

Input parameters

(a) NINT - number of five year intervals for which the population is being forecasted.

(b) LEN - length of interval being forecasted.

(c) N - number of age categories in which the population is distributed.

(d) NYEAR - base year

Format of Data Input

(1) Card 1 - Title card, 80 Alphanumeric places
(2) Card 2 - Title card
(3) Card 3 - parameter card, 4 five digit numbers are read, in order of parameters NINT, LEN, N and NYEAR.

If 'N' is greater than 16

(4) Cards 4, 5, 6 - numbers for the population distribution of males for the base year is read in on these cards. Eight ten digit numbers can be read in on each card in the following format:

```
- - - 6 5 4 3 2 1 0 / - - - - - 7 7 7 7 7   ... etc.
        (1 - 10)           (11 - 20)
```

(5) Cards 7, 8, 9 - numbers for the population distribution of females for the base year is read in on these cards. The same format as (4) applies.

For each five year interval, for which population projections are required, the following sets of cards should be provided.

(6) 3 cards - survivorship factors for the male population are read in on these cards. Eight ten digit numbers, including the decimal, can be read in on each card in the following format:

```
- - - - 9 8 7 6 5 4 / - - - - - . 8 8 7 7     ... etc.
          (1 - 10)          (11 - 20)
```

(7) 3 cards - servivorship factors for the female population are read in on these cards. The same format as (6) applies.

(8) 3 cards - fertility rates for each female age category are read in on these cards. The same format as (6) applies. Note, if the fertility rate for an age category is zero, a zero can be put in the last digit column of each number or the ten digit colums for that number can be left blank.

(9) 3 cards - male migration numbers for each age category are contained on these cards. The same format as (6) applies.

(10) 3 cards - female migration numbers for each age category are contained on these cards. The same format as (6) applies.

If there are 16 or less age categories only two cards rather than three are needed for (4) - (10) inclusive.

APPENDIX 5 MIGRATION SHARE OF GROWTH - SELECTED COUNTIES AND REGIONAL MUNICIPALITIES

	1961 - 1966			1966 - 1971			1971 - 1976		
	Natural Increase	Net Migration	Percent Migration	Natural Increase	Net Migration	Percent Migration	Natural Increase	Net Migration	Percent Migration
1. Ottawa Carleton	30,603	24,679	44.6	22,331	35,908	61.6	19,037	29,569	60.1
2. Durham* Region	14,113	23,595	62.6	11,344	15,004	56.9	10,982	19,061	63.4
3. Niagara Region	20,454	13,048	38.9	15,321	7,090	31.6	11,158	6,952	38.4
4. Peel* Region	13,264	47,482	78.2	17,077	70,476	80.5	23,742	92,294	79.5
5. Metro Toronto	133,070	130,495	45.5	112,679	92,128	45.0	87,394	-53,322	-
6. Waterloo Region	16,278	23,696	59.3	15,820	22,133	58.3	15,676	18,772	54.5
7. York* Region	8,373	13,634	62.0	6,142	23,590	79.3	7,380	30,475	80.5
8. Halton* Region	11,743	22,558	65.8	10,690	27,237	71.8	11,288	27,358	70.3
9. Wellington County	5,877	3,598	38.0	4,929	9,621	66.1	5,136	9,876	65.3
10. Middlesex County	16,265	11,716	41.9	13,050	19,561	60.0	12,119	9,612	44.2
11. Essex County	18,284	5,864	24.3	15,189	10,286	40.4	12,468	-3,503	-
12. Hamilton-Wentworth	25,970	9,024	25.8	18,765	-701	-	13,673	-5,422	-
13. Haldimand-Norfolk	4,550	-2,624	-	2,969	3,147	51.4	2,316	222	8.7

* Strong impact of Metropolitan Toronto

PD 130/81

THE REGIONAL MUNICIPALITY OF WATERLOO

COMMISSIONER OF PLANNING & DEVELOPMENT

TO: Chairman Judy Balmer and
Members of the Regional Planning and
Development Committee
Regional Municipality of Waterloo

DATE: Tuesday October 6, 1981

SUBJECT: POPULATION AND EMPLOYMENT FORECASTS
REGIONAL MUNICIPALITY OF WATERLOO

RECOMMENDATION:

That Regional Council reconfirm the existing population forecasts for Waterloo Region as presented in Staff Report PD 22/80 as the basis for future planning to the year 2001 and programming to the year 1986;

That Regional Council accept the employment targets as set out in the subject report and recommend these objectives as the basis for future industrial, commercial, tourism and other employment generating sectors;

That these objectives for population and employment form the framework for discussion with Provincial and other Agencies in considering and resolving related matters of mutual interest.

REPORT:

A. Population Forecast

In February 1980 Regional staff prepared a forecast for future population growth within the Regional Municipality of Waterloo. This report PD 22/80 reviewed the major determinants of population growth and projected the rate of future growth based on the following assumptions:

1. That mortality rates within the Regional Municipality will generally fall over the period to 2001. The Region of Waterloo is expected to approximate the Ontario average.
2. That fertility rates would conform to the Provincial "Low" fertility assumptions to 1986, thereafter, in our opinion there may be a slight upturn.

3. Net migration into the Regional Municipality was assumed to experience a turn-around during the period 1981-1986. This assumption was based on the Provincial assumption of the Waterloo share of net migration into Ontario of 30,000 per annum, and the relative attractiveness of Waterloo Region for internal population movements.

On the basis of the preceding assumptions, the population of the Region was forecasted to increase as follows: from an actual 1976 figure of 289,125:

1981	312,220
1986	342,404
1991	381,908
1996	421,498
2001	460,442

In October, 1980 following receipt of the annual assessed population updates from the Ministry of Revenue, Regional staff reviewed the above projections. On the basis of a 1980 population of 306,775 or an increase of 6056 persons between 1979 and 1980, the forecast 1981 population of 312,220 or 5445 persons between 1980 and 1981 was considered very likely. Similarly the 1986 forecast indicates a probable per annum growth of 6037 persons through simple averaging. In summary then, it is the opinion of Regional staff at this time that forecasted Regional Population over the short term to 1986 is reasonable.

Beyond 1986, as previously mentioned, population growth rates are predicated on one basic assumption, namely, economic re-vitalization on the North American, Canadian, Ontario and Regional scene. We have assumed that this economic turn-around will lead to more migrants entering the Regional Municipality because of its greater comparative advantage. As well with rising incomes, lowered inflation, it is expected that child-raising will not be as financially burdensome as at present. As a result we anticipate increased levels of in-migration as well as increasing rates of fertility. It must, therefore, be clearly understood that our post 1986 populations forecasts are extremely dependent on an economic revitalization of our National and Provincial economies especially as it may affect the Regional Municipality of Waterloo. We must remain optimistic and work towards that goal. Pessimism at this stage courts disaster.

If such an economic turn-around occurs it will be the responsibility of the Regional Municipality and its constituent municipalities to ensure that all the ingredients for growth in population and employment are in place to take advantage of such a turnaround. We suggest that this will require:

(1) A more balanced distribution of available industrial land across the Region to provide for a variety of types and sizes of new plant locations.

(2) Available serviced residential land to provide for various housing needs of the projected population.

(4) Strong local initiatives, both individually and through group action of area municipalities to attract investment, to undertake promotions, to share information.

(5) Strong encouragement to new high growth industries as replacements for declining industries.

(6) More widespread promotion of the natural, physical, social, educational potential of the Region for a wide range of job creating investments in manufacturing, commercial retail, commercial office, tourism and institutional growth.

(7) Marshalling the energies of energies of citizens and companies within the Regional Municipality in promoting Waterloo Region among private and business contacts when visiting other areas.

(8) Updating all By-laws that implement industrial and commercial development.

The basis for Regional population assumptions, therefore, rest on a combination of historical trends (the projection approach) and acknowledgement of a strong positive intervention by local municipalities (the forecasting approach).

The Regional Population Forecast closely approximated in the year 2001 an earlier Projection by The Ontario Ministry of Treasury and Economics for the Waterloo Region.

	Waterloo Region Forecast	Ontario Government Projection (A)	
1976	289,129	289,129	Actual
(1980)	(306,775)	(306,775)	Actual
1981	312,220	325,871	
1986	342,404	362,248	
1991	381,908	397,179	
1996	421,498	429,893	
2001	460,442	460,205	

However, it is clear that given the 1980 actual of 306,775 it is unlikely that the Ontario Government Figure for 1981 can be attained. The Ontario Government Projection is based on a low fertility assumption, 30,000

Two alternative projections have since been developed by the Ontario Government. Both of these protections have been discussed with Provincial staff. Basically these alternatives maintain the same overall population targets for the province as a whole but make varying assumptions on the proportion of that population likely to be relocating within the Province, and the ability of Metropolitan Toronto to keep its existing population or to attract new migrants. The implications of both these assumptions for Waterloo Region are shown in the following Table.

ONTARIO POPULATION PROJECTION

(Waterloo Region)

	Projection B	Projection C
1976	289,129	289,129
1981	317,624	324,940
1986	345,012	355,319
1991	370,370	381,484
1996	393,223	405,353
2001	413,626	426,667
Assumptions		
Fertility	Low	Low
External Migration	30,000	30,000
Internal Migration	0.27%	0.54 (1976-1986) 0.27 (1986-2001)

In our view, the results from both these projections would seem to indicate "Too High" projections in the short term, and "Too Low" projections in the long term. This would seem to be a direct result of the methodology employed in these projections. Because the projections are reliant to a large extent on historical trends the short term projections tend to reflect the high employment and population growth levels of the 1960 and early 1970's. At the same time use of an internal migration factor of 27% across the Province does not take into account an increased growth attraction within Waterloo Region relative to other areas. Consequently, the long term projection would seem to be too low.

The limitations and constraints of the projection technique employed in these Ontario Government future trends are clearly discussed in a letter from Dr. Rudy Kogler dated August 21, 1981, part of which is quoted below:

> "This approach assumes that exogenous influences will remain constant (investment, income, political decisions affecting density, development, etc.)..........Any purely demographic (Base) projection can be modified by the introduction of exogenous factors: economic, social, political and other. Such a modified population model may be cumbersome to handle and requires an

> intimate knowledge of relationships between the exogenous variables and the purely demographic ones.......
>
> However, there is a way out of this difficulty. Local planning authorities should accept our neutral demographic projections as the base which can then be modified through the introduction of suitable socio-economic variables. This task could be performed either by the interested local authority or by this office on the request of such an authority, provided that they supply us with the pertinent information. There is, however, one important caveat. Any alteration in the projected base population resulting from the introduction of modifying factors will also affect the size and shape of populations in adjacent areas. In other words, any change introduced in one area will necessitate changes in one or more areas so that the overall provincial population projecti remains unchanged".

The implications of the provincial government approach are as follows:

1. It is essentially a projection of statistical trends.
2. It does not take into account changing local patterns of investment and income.
3. It does not provide for political decisions which solve problems that might have constrained growth in the past.
4. It does not accommodate new public and private initiatives to create an acceptable framework for growth.

In this sense then the provincial projections may be regarded as a very conservative forecast of future growth. In the following table we have made comparisons between the results from alternative provincial assumptions and the current regional forecast. From this the effects of our regional assumptions will be seen. If, therefore, it is felt that a combination of improving economic promotion and development could lead to this additional population, then retention of our current forecasts would be logical. If there are doubts about our ability in this regard, then a reduction should be considered by modifying either our migration or fertility assumptions or both. Council must consider this very seriously.

In an attempt to reconcile the differences between the Provincial Population Projections for Waterloo Region and the forecasts approved by Regional Council (PD 22/80) Regional Staff reorganized the Provincial Assumptions in a manner suitable for our model and ran the model. The results are shown below:

ALTERNATIVE POPULATION COMPARISONS

	PD 22/80 Forecast	Provincial Projection "A"	Provincial Projection "B"
1976	289,129	289,128	289,128
1981	312,220	322,887	322,887
1986	342,404	354,168	354,168
1991	381,908	383,786	379,320
1996	421,498	411,117	401,629
2001	460,442	436,120	421,220

From this comparison it will be seen that Regional Planners are assuming that between 24322 and 39222 additional people can be attracted to this Region over and above the statistical population projection as a result of local and regional action in promotion and the removal of development constraints which currently exist.

Any disagreement with this assumption would, therefore, require a re-evaluation of our current forecast.

As is shown in the Table following in the initial periods 1976-1986 the migration and fertility rates protected by the Ministry for our Region are higher than those forecast by Regional Staff and are, in fact, probable. In the later period 1986-2001 they are lower due to different perceptions of trends in economic development, derived net migration and by implication fertility rates.

COMPONENTS OF GROWTH

REGIONAL MUNICIPALITY OF WATERLOO

	REGIONAL FORECAST PD 22/80			PROVINCIAL PROJECTION "A"			PROVINCIAL PROJECTION "B"		
me Period	Pop'n Change	Migration	Fertility	Pop'n Change	Migration	Fertility	Pop'n Change	Migration	Fertility
976 - 1981	23091	5000	18091	33759	12633	21126	33759	12633	21136
981 - 1986	30184	12000	18184	31281	12974	18307	31281	12974	18307
986 - 1991	39504	20000	19504	29618	13343	16275	25152	9385	15767
991 - 1996	39590	20000	19590	27331	13665	13666	22309	9548	12761
996 - 2001	38944	20000	18944	25003	13914	11089	19591	9671	9920

1/ Mortality (Survivorship) Assumptions are the same for all three estimates.

B. Labour Force Implications

Labour force forecasts used within the Regional Municipality are dependent on population forecasts and estimates of labour force participation with an adjustment made for unemployment. Our original approach was to use a constant labour force participation rate over the forecast period. This was, however, revised on the advice of the Ministry of Treasury and Economics which suggested instead a gradually increasing rate of overall (gross) labour force participation. This is explained by the following:

1) Constant participation rate for primary labour force (ie) males 25-54 years

2) Increasing participation rate for secondary labour force (ie) females, males 15-24, and males over 55 years. This assumption is based on:

    (i) Decline in fertility
    (ii) Increasing availability of day care
    (iii) Increasing levels of education
    (iv) Shortened work week
    (v) Growth in female oriented employment
    (vi) Increasing opportunities for part-time employment
    (vii) Erosion of income of primary wage-earners due to inflation
    (viii) Changes in minimum wage legislation, Unemployment Insurance Benefits, Canada Pension Plan, and taxation tend to encourage participation.
    (ix) Longer life expectancy

The suggested Ministry Labour Force participation rates when applied to the forecast Regional populations yield corresponding labour force figures as illustrated below. These figures are further adjusted by applying an unemployment rate to yield expected employment figures.

"Labour Force Participation Rate" is the percentage of the population 15 years of age and over which is gainfully employed, after making allowance for persons who are unemployed.

FORECASTED FUTURE REGIONAL EMPLOYMENT

	1971	1976	1981	1986	1991	1996	2001
Total Population	254,030	290,602	312,220	342,404	381,908	421,494	460,462
Population 15 Years and Over	179,300	215,452	238,291	266,199	298,809	331,310	364,091
Labour Force Participation Rate 1/	66.3	69.0	71.3	73.7	74.0	74.6	75.0
Total Labour Force	118,876	148,662	169,901	196,189	221,118	247,157	273,068
Unemployment Rate 2/	3%	7%	8%	6%	5%	5%	5%
Unemployed	3,577	10,406	13,592	11,771	11,056	12,358	13,653
Total Employment	115,309	138,256	156,309	184,418	210,062	234,799	259,415

1/ Based on Assumptions obtained from the Ministry of Treasury, Economics and Inter-Governmental Affairs.

2/ Unemployment rates have climbed considerably since 1971 and have been hovering in the 7 to 9 percent area in the Region over the past few years. In assuming a turn around in the economy, the passing of the great numbers presently in the labour force and a continued increase in job opportunities, the unemployment rate should fall commencing after 1981 and level out around 5% for the Region of Waterloo although for Canada the prediction is around 6%.

In the Fall of 1980 Regional Staff conducted a survey of employment within Waterloo Region and found that there were about 133,715 employed persons outside of agriculture. This represents an increase of 28,153 jobs over the period 1971 - 1980. Consequently, on the basis of an average per annum growth of 3130 jobs it would appear that the forecasted employment of 156,529 jobs in 1986 might be slightly high by 4034 persons. It should, however, be noted that the 1980 inventory did not include self-employed persons gainfully employed at home or operating out of home premises, because of the difficulty in locating such persons. If this group were added, the 1980 inventory may very well be representative of current conditions. It is considered close enough so that no change to our forecast would be required.

A review of participation rates as estimated by Statistics Canada from sample surveys conducted within the Metropolitan Areas of Canada will show that our estimated rates for 1981 from our Industrial Land Needs and Supply Study closely approximate the results of the Statistics Canada findings. This is shown on the table following.

COMPARATIVE LABOUR FORCE PARTICIPATION RATES

1976	1976	1977	1978	1979	1980	1981
Industrial Land Needs Study Waterloo Region	69.0	-	-	-	-	71.3
1976 Census County Waterloo	66.0	-	-	-	-	-
Statistics Canada* Kitchener CMA ø	70.3	70.0	71.2	72.3	73.1	71.4
STATISTICS CANADA						
Calgary *	67.3	69.3	70.6	72.2	75.6	75.6
Edmonton *	71.0	68.5	69.7	71.8	72.4	75.4
London *	65.5	66.6	68.7	72.8	73.0	66.2
Toronto *	68.6	69.0	70.4	71.3	71.2	71.9

* Statistics Canada Figures are for June of each year except 1981 which is for May.

ø Kitchener Census Metropolitan Area (C.M.A.) includes Kitchener, Waterloo, Cambridge, Woolwich Township, North Dumfires Township.

In projecting future labour force participation rates one needs to anticipate various social and economic trends which could occur at that time. As shown earlier, our Industrial Land Needs and Supply Study followed a provincial recommendation that participation rates for Waterloo Region be allowed to rise from 71.4% in 1981 to 75% by 2001. Though rates of 75% are not unusual in some high growth communities as shown for Calgary and Edmonton C.M.A. in 1981, we are prepared to revise such rates for a stable, balanced community such as Waterloo Region. Should we retain a high participation rate of 75% this would result in a total employment of 259,415 by 2001. If we recognize that an economic turnaround will entice some female employment out of the labour force, but that a larger segment of older people will want to stay gainfully employed longer, then a conservative assumption of a constant 1981 rate would seem reasonable. This results in a total employment of 246,963 or an additional employment of 90,434 over 1981. The derived growth per annum of 4522 employees is not unreasonable.

ALTERNATIVE EMPLOYMENT FORECAST

	1981	1986	1991	1996	2001
Total Population	312,220	342,404	381,908	421,494	460,462
Population 15 Years +	238,291	266,199	298,809	331,310	364,091
Labour Force Participation Rate	71.4	71.4	71.4	71.4	71.4
Total Labour Force	170,140	190,066	213,350	236,555	259,961
Unemployment Rate	8%	6%	5%	5%	5%
Unemployed	13,611	11,404	10,667	11,828	12,998
Total Employment	156,529	178,662	202,683	224,727	246,963

Participation and employment rates are ever-changing factors and are very difficult if not impossible to predict accurately. The above estimated total employment figures are, therefore, developed as Planning Guides only which must be constantly monitored and revised as conditions change. The above participation rates are gross factors applied to total labour force. A more refined approach would be to develop age and sex specific participation rates and apply them to appropriate population groups. While this is not done in this exercise, certain irregularities in the future population composition should be noticed. As illustrated in the table following, some of the prime age groups from which the labour force is traditionally drawn for example, 20-24 years is expected to fall as a percentage oftotal population, as well as in absolute number though the total population has increased substantially. Other categories, concentrated in the 15-19 and 25-34 age groups have also decreased in relative numbers. Thus, despite the assumption of a 71.4% participation rate, the employees in the labour market will increase and be comprised of older people 35 years and over. This will have considerable implications for a wide variety of social policies.

POPULATION TO 2001

Age Group	1976	% of Total Pop.	1986	%	1996	%	2001	%
0-14	76,560	26.5	76,205	22.3	90,188	21.4	96,351	20.9
15-19	27,480	9.6	26,219	7.6	28,141	6.7	30,365	6.6
20-24	29,850	10.3	28,794	8.5	27,920	6.7	29,633	6.4
25-34	48,345	16.7	62,812	18.3	67,595	16.0	66,729	14.5
35-49	32,370	11.2	51,389	15.0	71,350	16.9	74,641	16.2
45-54	30,295	10.7	32,958	9.6	53,597	12.7	66,929	14.5
55-64	21,200	7.3	29,430	8.6	32,865	7.8	39,874	8.7
65+	22,945	7.7	34,597	10.1	49,845	11.8	55,923	12.2
	289,045	100.0	324,404	100.0	421,498	100.0	460,442	100.0

In conclusion, though employment opportunities are traditionally viewed as a generator of population growth, it should also be accepted that population size itself attracts and contributes to economic growth. Strong positive action by public and private agencies in either of these two areas, and preferably in both these areas simultaneously could significantly affect the pace and pattern of growth. However, whether the targets indicated in this report for population and employment are realized will depend initially on an upturn in the economy as reflected in increasing investment, increasing rates of job creation, increased disposable incomes and increasing levels of personal and household expenditures.

Changes in the type of employment are inevitable as for example, replacement of labour intensive operations by highly automated operations. Levels of education required for industrial operations are expected to increase and with it, increased wages and salaries. Shorter work week for the average worker; more liberal conditions for time off; shared job arrangements; increased incidence of contract jobs; job performance from home locations are all signs of the future which open new horizons for job creation.

Waterloo Region is stratigically placed and well-endowed to take advantage of these trends. Our forecasts for growth recognize these opportunities. Political committment must continue.

FW:sg

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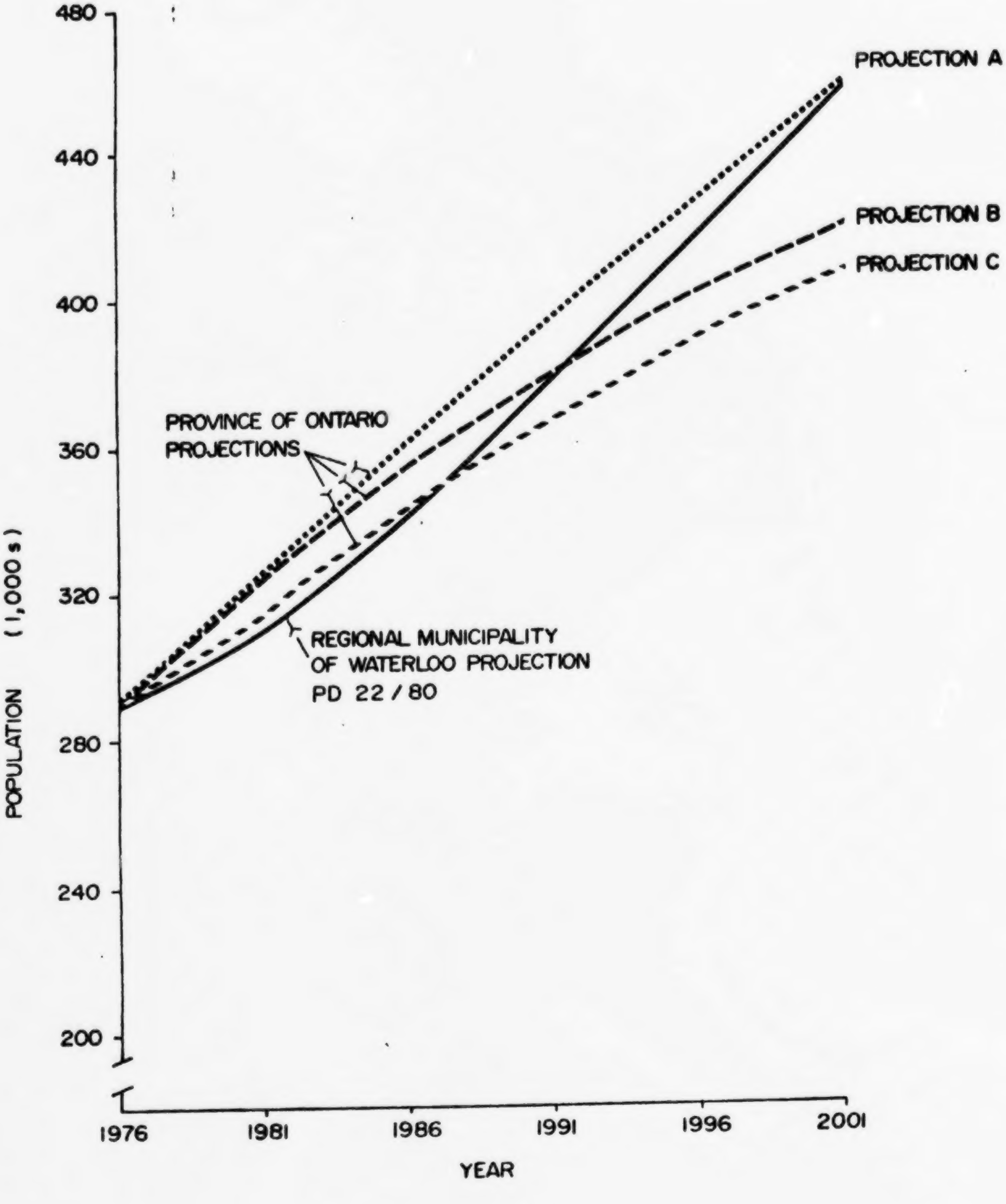
ALTERNATIVE POPULATION PROJECTIONS
REGIONAL MUNICIPALITY OF WATERLOO



APPENDIX B

ALTERNATIVE ECONOMIC FORECAST

In this Study housing demand has been distinguished from housing need by economic factors. In order to forecast housing demand it was necessary to take into account an economic forecast of incomes, inflation and unemployment. Several agencies in Canada provide an economic forecast of these factors. The forecasts of agencies considered in this study include the Conference Board of Canada, the Economic Council of Canada, The Finance Department of the Federal Government and the Ontario Economic Council. A summary of the forecasts of the first three agencies is presented below. The forecast of the Ontario Economic Council is pending publication and therefore cannot be presented here. In general, however, this forecast corresponds to the other three economic forecasts.

Table B-1 shows the three alternative economic forecasts. The Conference Board of Canada's forecast is distinguished from the other two forecasts in that unemployment is higher and inflation lower, indicating a deeper recession. All three forecasts have underestimated unemployment levels in 1982, with current rates at 10.2%.

The Economic Council of Canada, the Conference Board of Canada, and the Department of Finance all forecast a slow economic recovery. This slow recovery is based on a pessimistic view of U.S. economic prospects and the likelihood of a continuation of high interest rates.

The forecast of the Conference Board of Canada was the selected forecast used to estimate the percentage probability of household formation. This forecast was chosen since it appeared to be a better estimate of current economic conditions and coincided more closely with recent predictions of a prolonged economic slump, featured by higher rates of unemployment and lower rates of inflation.

TABLE B-1

FORECASTED ANNUAL PERCENTAGE CHANGE IN REAL INCOMES, UNEMPLOYMENT INFLATION AND HOUSING PRICES

1982-1986

	REAL INCOME				UNEMPLOYMENT				INFLATION			HOUSE PRICES
Year	Dept. of Finance 1)	Conference Board 2)		Econ. Council 3)	Dept. of Finance 1)	Conference Board 2)		Econ. Council 3)	Dept. of Finance 1)	Conference Board 2)	Economic Council 3)	Conference Board 2)
	Can.	Can.	Ont.	Can.	Can.	Can.	Ont.	Can.	Can.	Can.	Can.	Can.
1982	-.1%	+.1%	-.1%	+2.3%	7.8%	8.7%	7.5%	7.1%	11.7%	10.2%	11.3%	2.1%
1983	+1.4	+.5	-.1	+1.5	8.3	8.7	7.5	6.5	10.2	7.9	11.0	1.9
1984	+1.2	+.1	---	+2.0	8.3	8.5	---	6.5	9.2	6.5	9.0	6.3
1985	+.7	+.8	---	+1.5	8.0	8.2	---	6.4	8.3	6.3	9.1	9.4
1986	+.5	+.8	---	+2.3	7.8	7.8	---	---	7.7	6.9	---	10.1

1) Source: Department of Finance, Canada, The Current Economic Situation and Prospects for the Canadian Economy in the Short and Medium Term, November, 1981.

2) Source: The Conference Board of Canada, Quarterly Canadian Forecast, April, 1982

3) Source: Economic Council of Canada, Post-Budget Update of the Eighteenth Annual Review Base Case, December 17, 1981.

APPENDIX C

ALTERNATIVE SHORT RUN PROBABILITY OF HOUSEHOLD FORMATION FORECASTS 1981-1986

Introduction

In preparing an acceptable Forecast of Household Formation, 1981 to 1986, a number of alternative forecasts were prepared, each based on varying assumptions. Four alternative forecasts of percentage probability of household formation by age categories were prepared for the short run period from 1981 to 1986 for the Region. These short run alternative forecasts take into account both economic and social factors. The underlying social factors are assumed to result in an increased desire of all age groups to form a separate household. The greatest potential increase in percentage probability of household formation is assumed to occur in the young age groups, age 15 to 24, and 25 to 34, and senior citizens, age 65 and over with less potential for increase in the middle age categories age 35 to 64.

In the short run it is assumed that economic conditions will act as a constraint on household formation. Economic forecasts in the 1981 to 1986 period indicate a continuation of declining real incomes to 1983, high unemployment through the 1982-1983 period, with only a slow decline after 1983, and continuing high inflation throughout the 1981 to 1986 period.

Alternative Forecasts 1981 to 1986

Alternative 1, Table 1

This alternative presents the most pessimistic forecast of growth in probability of household formation to 1986. It anticipates a greater decline in percentage probability of household formation than the three alternative forecasts for all age groups between 1981 and 1983, reaching on the overall probability of household formation of 44.4% in 1983. Alternative 1 forecasts a turnaround in probability of household formation beginning in 1983-1984 as opposed to 1982-1983 for the remaining three alternatives.

Alternative 1 forecasts a more pronounced decline in probability of household formation in the younger age groups which are more greatly affected by adverse economic conditions. Table 1 shows the age groups 15-24 declining from a 15% probability of household formation in 1981 to 13.0% in 1983 and the age group 25-34 declining from 49.8% to 48.5% in the same period.

This alternative forecasts a decline in probability of household formation in the age categories 35 and over averaging approximately 0.5% over the 1981 to 1983 period. The remaining three alternatives, forecast less of a decline for these age categories to 1983.

Alternative 1 forecasts a turnaround in probability of household formation beginning in 1983-1984. The rate of increase in probability is highest for the young age categories with the 15-24 age group experiencing a 0.5% increase between 1983-1984 and the 25-34 age category a 0.4% increase. These increases for the younger age groups are greater than the 0.3% increase forecast by alternative 2 over the same period and equals that forecast by alternatives 3 and 4. To 1986 Alternative 1 forecasts a continuation of these increases for the 15-34 categories with the 1986 probabilities equalling the 1981 levels. The remaining 3 alternatives all forecast 1986 levels of probability higher than 1981 levels.

In the 35-64 age categories alternative 1 forecasts only a modest turn-around beginning in 1983-1984, averaging between 0.1% and 0.2% annually to 1986, with the 1986 percentage probabilities equalling 1981 levels.

Alternative 1 forecasts 1986 probability levels equalling 1981 levels, while the other alternatives forecast higher 1986 probabilities.

Alternative 1 also forecasts increases in probability of household formation of 0.1 to 0.2% annually between 1984 and 1986 for the age category 65 and over. The three alternative forecasts have increases averaging 0.2 to 0.3% annually over the same period. Alternative 1 forecasts a 1986 probability of household formation of 59.8% for the 65 and over age category compared with a range of between 60.2% and 60.6% for the three alternatives.

This assumption of probability of household formation in Alternative 1 results in a total growth in households of 15,725 in the Region in the 1981 to 1986 period, for an average of 3,145 new households per year. The total growth in households between 1981 and 1986 is only slightly less than preferred Alternative 2, however, the annual distribution is significantly different. Alternative 1 forecasts a greater decline in probability of household formation between 1981 and 1983 than preferred Alternative 2. Forecasted household growth ranges from a low of 1,248 new households in 1981 to 1982 to a high of 4,742 new households in 1984-1985. Alternative 1 is anticipating that current poor economic conditions will have a greater negative impact between 1981 and 1983 than the other short run alternatives.

Alternative 2 - Preferred Alternative - Table 2

In this forecast it is anticipated that probability of household formation will decline for all age groups between 1981 and 1982. The decline is more pronounced for the age groups 15-24 and 25-34 which are more affected by economic factors. The decline in overall probability to 1982 forecast by Alternative 2 is less than the Alternative 1 forecast and equal to the alternative 4 forecast but exceeds the forecasted decrease in alternative 3. Alternative 2 forecasts an overall decline in probability of household formation to 44.6% in 1982. Between 1982 and 1983 the percentage probability of household formation is forecasted to continue to decline but at a decreasing rate for younger age groups. There is no forecasted decrease in probability for the age groups over 55 between these years. Alternative 2 forecasts a slight rise in total probability to 44.7% in 1983 compared with Alternative 1, which forecasts a continuing decline to 44.4% in 1983. Alternatives 3 and 4 forecast substantially higher increases in overall probability to 1983 than Alternative 2. In Alternative 2, after 1983 it is expected that with real incomes rising and unemployment decreasing that the percentage probability of household formation will begin to rise slowly for all age groups. This rise will be more pronounced in younger age groups which were more affected by the economic down-turn. The rate of increase in probability of household formation for the 15 to 34 age categories between 1983 and 1986 is actually less for Alternative 2 than the other three alternatives.

Alternative 2 forecasts less of an increase in probability of household formation for the age categories 35 to 64 between 1983 and 1986 than does Alternative 1, but because the decline experienced between 1981 and 1983 was less for Alternative 2, the 1986 probability of household formation levels exceed those forecasted by Alternative 1.

Alternative 2 forecasts an increase in probability of household formation for the 65 and over age category from 59.6% in 1983 to 60.2% in 1986. This increase is greater than Alternative 1 but less than Alternatives 3 and 4.

Alternative 2 forecasts a growth of 16,397 households in the 1981 to 1986 period for an average of 3,279 new households per year. Forecasted household growth ranges from a low of 1,647 new households in 1981-1982 to a high of 4,318 new households in 1985-1986.

Alternative 2 was chosen as the preferred alternative as it more closely approximated the current economic forecasts to 1986.

Alternative 3 - Table 3

Alternative 3 is a more optimistic forecast than either Alternatives 1 or 2. This Alternative forecasts a decline in probability of household formation for all age groups in 1981-1982. The decline to 1982 for age groups under 55 years is less than is forecasted by Alternative 2, while for age groups 55 years and over it is the same for both alternatives.

Table 3 shows that the percentage probability of household formation remains constant for all age groups from 1982 to 1983. Between 1983 and 1984 all age groups experience an increase in probability of household formation, except the 45 to 54 age category which remains constant. All age groups experience a continued increase in percentage probability of household formation to 1986 with the largest increases occurring in the age categories under 35 years of age and those over 65. years of age. While the rates of increase in probability of household formation forecasted in Alternative 3 between 1983 and 1986 are not substantially different from Alternative 2 the fact that Alternative 3 does not forecast as great a decline from 1981 to 1983 results in alternative 3 having a higher total probability in 1986 of 46.6% compared with 46.4% for Alternative 2. Table 3 indicates that Alternative 3 forecasts a 16.0% probability of household formation for the 15 to 24 age category for 1986 compared with 15.3% for Alternative 2. For the age category 65 and over Alternative 3 forecasts a 60.4% probability in 1986 compared to 60.2% for Alternative 2. The remaining age categories have basically the same probabilities in 1986 for both Alternatives. By 1986 the percentage probability of household formation for all age categories is higher than 1981 levels.

Alternative 3 forecasts a growth of 16,871 households in the 1981 to 1986 period averaging 3,374 new households annually. Household growth forecast ranges from a low of 2,066 in 1981-1982 to a high of 4,111 households in 1985-1986. While this alternative forecasts a greater number of new households between 1981 to 1986 than preferred Alternative 2 the growth is distributed more evenly throughout the period. This alternative assumes that poor economic conditions will have less of an impact on household formation in the period 1981 to 1983.

Alternative 4 - Table 4

Alternative 4 is the most optimistic of the short run alternatives. This Alternative forecasts a turn-around in growth of probability beginning in 1982-1983.

In this forecast it is anticipated that the probability of household formation will decline for all age groups between 1981 and 1982 with the decline by age category being greater than that predicted by alternative 3 but not as large as alternatives 1 and 2. Table 4 shows that the greatest declines to 1982 are experienced in the age categories 15-24, from 15% in 1981 to 14% in 1982 and the 25 to 34 age category from 49.8% to 49.0% in 1982. This Alternative forecasts the earliest turn-around with all age categories experiencing an increase in probability of household formation between 1982 and 1983. The three other alternative forecasts do not predict any increase in probability by age categories until 1983-1984.

Between 1983 and 1986 Alternative 4 forecasts an increase in probability of household formation for the 15-24 age category, as shown on Table 4, from 14.5% in 1983 to 17.0% in 1986. This is higher than the increase of 2.0% forecast in preferred Alternative 2 for the 15-24 age category from 13.3% in 1983 to 15.3% in 1986. Similarly the increases in probability of household formation for the age categories 55-64 and 65 plus are significantly higher for Alternative 4 than the preferred Alternative 2 forecast. The age groups 25-54 experience similar increases between 1983 and 1986 in both alternatives. The overall probability of household formation increases for Alternative 4 from a low of 44.6% in 1982 to 47.1% in 1986, compared to Alternative 2 which increases from 44.6% in 1982 to 46.4% in 1986.

Alternative 4 results in a growth of 18,123 households in the 1981 to 1986 period averaging 3,625 households per year. This ranges from 1,530 new households between 1981 and 1982 to 4,214 new households between 1985-1986.

TABLE 1

POPULATION AND HOUSEHOLD PROJECTIONS

REGION OF WATERLOO 1981-1986, ALTERNATIVE 1

Age of Household Head		1981		1982		1983		1984		1985		1986	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,579		55,437		55,295		55,154		55,013	
	Households	8,358	15.0	7,503	13.5	7,206	13.0	7,465	13.5	7,722	14.0	8,252	15.0
25 - 34	Population	58,687		59,512		60,337		61,162		61,987		62,812	
	Households	29,226	49.8	29,042	48.8	29,263	48.5	29,908	48.9	30,622	49.4	31,280	49.8
35 - 44	Population	38,633		41,184		43,735		46,286		48,837		51,389	
	Households	21,055	54.5	22,239	54.0	23,529	53.8	24,994	54.0	26,518	54.3	28,007	54.5
45 - 54	Population	31,066		31,444		31,822		32,200		32,578		32,958	
	Households	16,620	53.5	16,728	53.2	16,866	53.0	17,098	53.1	17,364	53.3	17,633	53.5
55 - 64	Population	25,526		26,307		27,088		27,869		28,650		29,431	
	Households	14,805	58.0	15,179	57.7	15,603	57.6	16,080	57.7	16,588	57.9	17,070	58.0
Over 65	Population	28,657		29,845		31,033		32,221		33,409		34,597	
	Households	17,137	59.8	17,758	59.5	18,403	59.3	19,139	59.4	19,912	59.6	20,689	59.8
TOTAL	Population	238,290		243,871		249,452		255,033		260,615		266,200	
	Households	107,201	45.0	108,449	44.5	110,870	44.4	113,884	44.7	118,626	45.5	122,926	46.2

T A B L E 2

POPULATION AND HOUSEHOLD PROJECTIONS

REGION OF WATERLOO 1981-1986, ALTERNATIVE 2

Age of Household Head		1981		1982		1983		1984		1985		1986	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,579		55,437		55,295		55,154		55,013	
	Households	8,358	15.0	7,614	13.7	7,373	13.3	7,520	13.6	7,942	14.4	8,417	15.3
25 - 34	Population	58,687		59,512		60,337		61,162		61,987		62,812	
	Households	29,226	49.8	29,160	49.0	29,384	48.7	29,969	49.0	30,746	49.6	31,532	50.2
35 - 44	Population	38,633		41,184		43,735		46,286		48,837		51,389	
	Households	21,055	54.5	22,321	54.2	23,617	54.0	25,087	54.2	26,567	54.4	28,058	54.6
45 - 54	Population	31,066		31,444		31,822		32,200		32,578		32,958	
	Households	16,620	53.5	16,760	53.3	16,897	53.1	17,130	53.2	17,429	53.5	17,665	53.6
55 - 64	Population	25,526		26,307		27,088		27,869		28,650		29,431	
	Households	14,805	58.0	15,205	57.8	15,657	57.8	16,136	57.9	16,617	58.0	17,099	58.1
Over 65	Population	28,657		29,845		31,033		32,221		33,409		34,597	
	Households	17,137	59.8	17,788	59.6	18,496	59.6	19,235	59.7	19,979	59.8	20,827	60.2
TOTAL	Population	238,290		243,871		249,452		255,033		260,615		266,200	
	Households	107,201	45.0	108,848	44.6	111,424	44.7	115,077	45.1	119,280	45.8	123,598	46.4

TABLE 3

POPULATION AND HOUSEHOLD PROJECTIONS

REGION OF WATERLOO 1981-1986, ALTERNATIVE 3

Age of Household Head		1981		1982		1983		1984		1985		1986	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,579		55,437		55,295		55,154		55,013	
	Households	8,358	15.0	7,781	14.0	7,761	14.0	8,018	14.5	8,273	15.0	8,802	16.0
25 - 34	Population	58,687		59,512		60,337		61,162		61,987		62,812	
	Households	29,226	49.8	29,339	49.3	29,746	49.3	30,275	49.5	30,870	49.8	31,469	50.1
35 - 44	Population	38,633		41,184		48,735		46,286		48,837		51,389	
	Households	21,055	54.5	22,363	54.3	23,748	54.3	25,226	54.5	26,665	54.6	28,110	54.7
45 - 54	Population	31,066		31,444		31,822		32,200		32,578		32,958	
	Households	16,620	53.5	16,791	53.4	16,993	53.4	17,194	53.4	17,429	53.5	17,665	53.6
55 - 64	Population	25,526		26,307		27,088		27,869		28,650		29,431	
	Households	14,805	58.0	15,205	57.8	15,657	57.8	16,164	58.0	16,646	58.1	17,129	58.2
Over 65	Population	28,657		29,845		31,033		32,221		33,409		34,597	
	Households	17,137	59.8	17,788	59.6	18,496	59.6	19,268	59.8	20,079	60.1	20,897	60.4
TOTAL	Population	238,290		243,871		249,452		255,033		260,615		266,200	
	Households	107,201	45.0	109,267	44.8	112,401	45.1	116,145	45.5	119,961	46.0	124,072	46.6

TABLE 4

POPULATION AND HOUSEHOLD PROJECTIONS

REGION OF WATERLOO 1981-1986, ALTERNATIVE 4

Age of Household Head		1981		1982		1983		1984		1985		1986	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,579		55,437		55,295		55,154		55,013	
	Households	8,358	15.0	7,781	14.0	8,038	14.5	8,294	15.0	8,825	16.0	9,352	17.0
25 - 34	Population	58,687		59,512		60,337		61,162		61,987		62,812	
	Households	29,226	49.8	29,161	49.0	29,867	49.5	30,581	50.0	31,117	50.2	31,783	50.6
35 - 44	Population	38,633		41,184		43,735		46,286		48,837		51,389	
	Households	21,055	54.5	22,239	54.0	23,836	54.5	25,318	54.7	26,763	54.8	28,213	54.9
45 - 54	Population	31,066		31,444		31,822		32,200		32,578		32,958	
	Households	16,620	53.5	16,665	53.0	17,025	53.5	17,130	53.7	17,527	53.8	17,764	53.9
55 - 64	Population	25,526		26,307		27,088		27,869		28,650		29,431	
	Households	14,805	58.0	15,127	57.5	15,711	58.0	16,220	58.2	16,732	58.4	17,246	58.6
Over 65	Population	28,657		29,845		31,033		32,221		33,409		34,597	
	Households	17,137	59.8	17,758	59.5	18,527	59.7	19,333	60.0	20,146	60.3	20,966	60.6
TOTAL	Population	238,290		243,871		249,452		255,033		260,615		266,200	
	Households	107,201	45.0	108,731	14.6	113,004	45.3	116,876	45.8	121,110	46.5	125,324	47.1

APPENDIX D

ALTERNATIVE LONG RUN FORECASTS OF HOUSEHOLD FORMATION 1986-2001

Introduction

Five alternative forecasts of percentage probability of household formation by age categories were prepared by five year intervals for the long run period 1986 to 2001 for the Region. In the long run forecasts it is assumed that only social factors will affect changes in probability of household formation and that economic conditions will not be a limiting factor.

Alternative 1 - Table 1

Alternative 1 uses as a 1986 base the percentage probabilities of household formation derived from short run Alternative 3. forecast. The 1986 base probabilities are, therefore, higher than for the long run preferred Alternative 2. While each of the other long run forecast alternatives predict a trend to a declining rate of increase in probability of household formation to 2001, Alternative 1 forecasts a relatively steady increase in probability of household formation for each five year period. The result is an increase of 64,361 new households between 1986 and 2001 averaging 21,454 for each five year period. Forecasted household growth ranges from 21,019 new households between 1986-1991 to 21,666 new households in the 1996-2001 period.

The largest increases in probability of household formation occur again in the younger age groups 15-24, 25-34 and the elderly age 65 and over.

Alternative 2 - Preferred Alternative - Table 2

This Alternative uses the 1986 base percentage probabilities of household formation derived from short run preferred Alternative 2. Together these two alternatives, the short run and the long run Alternative 2, form the Preferred Probabilities of Household Formation for the 1981 to 2001 period.

Table 2 shows that Alternative 2 forecasts a substantial increase in probability of household formation for all age groups in the 1986-1991 period, most notable in the 15-24, 25-34 and 65 plus age categories. This significant increase in probability of household formation is partially attributable to individuals who postponed forming a household in the 1981 to 1986 period because of economic uncertainty. In the 1986-1991 period these individuals are expected to use the economic turnaround as an opportunity to form a household.

The rate of increase in probability of household formation declines for all age groups in the remaining five year time periods, 1991-1996 and 1996 to 2001. This alternative forecasts the creation of 61,755 new households in the 1986 to 2001 period averaging 20,585 new households in each five year period. Forecasted household growth ranges from a high of 22,259 households in the 1986-1991 period and declines to 19,698 new households in the 1996-2001 period.

Alternative 3 - Table 3

Alternative 3 maintains the 1980 percentage probabilities of household formation as a constant for each five year period to 2001. This alternative discounts changes in probability of household formation due to social factors in the long run or economic and social factors in the short run.

While this alternative cannot be accepted as a realistic forecast of household formation to 2001, it is useful in determining the extent to which population growth and age structure changes are responsible for the increase in households. Alternative 3 forecasts 52,390 new households for the 1986-2001 period entirely attributable to population changes. Therefore, in examining the forecast of 61,755 new households between 1986 and 2001 for the preferred Alternative, 52,390 new households are attributable to population changes and 9,365 new households are attributable to social factors.

Alternative 4 - Canada Mortgage and Housing Corporation Ontario Projection - Table 4

This alternative uses percentage probabilities of household formation by age categories prepared by Central Mortgage and Housing Corporation (C.M.H.C.) for Ontario and applies them to the Region's population forecast by age category. In this alternative the 1986 base probabilities of household formation are higher than the preferred alternative for all age categories except 35-44 and 55-64 which are lower than Alternative 2.

Alternative 4 forecasts a rapid decline in the rate of increase of probability of household formation from a 2.0% increase overall between 1986 to 1991 to a 0.2% increase in the 1996 to

2001 period. This Alternative predicts a more rapid end to the trend towards continuous increases in probability of household formation. In a number of instances this alternative projects negative growth in percentage probability for some age categories.

The result is an increase of 59,750 new households between 1986 and 2001 averaging 19,917 new households in each five year period. Forecasted household growth ranges from 21,976 new households in the 1986-1991 period to 17,476 new households between 1996-2001.

Alternative 5, Canada Mortgage and Housing Corporation, Kitchener Census Metropolitan Area Projection - Table 5

Alternative 5 uses percentage probabilities of household formation by age categories prepared by Central Mortgage and Housing Corporation specifically for the Kitchener Census Metropolitan Area (C.M.A.) and applies them to the Region's population forecast by age category.

In this alternative both the 1981 and 1986 probabilities of household formation are substantially higher than the preferred alternative. For example in the age category 15-24 for 1981 Alternative 5 has a percentage probability of 20.7% while Alternative 2 has a percentage probability of only 15.0%. Alternative 5 has a 1986 overall percentage probability of 49.2% compared to only 46.4% for Preferred Alternative 2.

This alternative forecasts a rapid decline in the rate of increase of probability of household formation between 1986 and 2001. Unlike Alternative 4, based on Canada Mortgage and Housing Corporation Ontario Projections, which anticipated a slowdown of the rate of increase for all age categories, Alternative 5 forecasts that this slowdown will be concentrated in the middle and older age categories 45 and older while the age categories 15-44 maintain relatively high rates of increase in probability of household formation. Declines in percentage probability of household formation are forecasted for the age category 45-54 between 1991 and 2001 and for the age category 55 to 64 between 1996 and 2001.

Alternative 5 forecasts an increase of 61,372 new households between 1986-2001 averaging 20,457 new households in each five year period. The increase is greater in the 1986-1991 period with 22,739 new households declining to 19,268 new households between 1996 and 2001.

TABLE 1

POPULATION AND HOUSEHOLD PROJECTIONS - REGION OF WATERLOO 1981-2001 ALTERNATIVE 1

Age of Household Head		1981		1986		1991		1996		2001	
		No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,013		54,141		56,061		59,998	
	Households	8,358	15.0	8,802	16.0	9,745	18.0	10,652	19.0	12,600	21.0
25 - 34	Population	58,687		62,812		66,121		67,595		66,729	
	Households	29,226	49.8	31,469	50.1	33,721	51.0	35,817	53.0	36,701	55.0
35 - 44	Population	38,633		51,389		64,981		71,350		74,641	
	Households	21,055	54.5	28,110	54.7	35,804	55.1	39,885	55.9	42,023	56.3
45 - 54	Population	31,066		32,958		40,287		53,597		66,927	
	Households	16,620	53.5	17,665	53.6	21,795	54.1	29,425	54.9	36,877	55.1
55 - 64	Population	25,526		29,430		30,724		32,865		39,874	
	Households	14,805	58.0	17,129	58.2	18,066	58.8	19,653	59.8	24,004	60.2
Over 65	Population	28,657		34,597		42,558		49,845		55,923	
	Households	17,137	58.8	20,897	60.4	25,960	61.0	31,353	62.9	36,238	64.8
TOTAL	Population	238,290		266,200		298,812		331,313		364,092	
	Households	107,201	45.0	124,072	46.6	145,091	48.6	166,767	50.3	188,433	51.6

** Source: Population by age cohort is based on the 1980 Regional Population Forecast (Regional PD 22/80 and PD 130/81).

TABLE 2

POPULATION AND HOUSEHOLD PROJECTIONS - REGION OF WATERLOO

1981-2001 ALTERNATIVE 2

Age of Household Head		1981		1986		1991		1996		2001	
		No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,013		54,141		56,061		59,998	
	Households	8,358	15.0	8,417	15.3	9,745	18.0	10,652	19.0	12,000	20.0
25 - 34	Population	58,687		62,812		66,121		67,595		66,729	
	Households	29,226	49.8	31,532	50.2	33,986	51.4	35,285	52.2	35,367	53.0
35 - 44	Population	38,633		51,389		64,981		71,350		74,641	
	Households	21,055	54.5	28,058	54.6	35,934	55.3	39,742	55.7	41,874	56.1
45 - 54	Population	31,066		32,958		40,287		53,597		66,927	
	Households	16,620	53.5	17,665	53.6	21,876	54.3	29,318	54.7	36,877	55.1
55 - 64	Population	25,526		29,431		30,724		32,865		39,874	
	Households	14,805	58.0	17,099	58.1	18,189	59.2	19,654	59.8	24,004	60.2
Over 65	Population	28,657		34,597		42,553		49,845		55,923	
	Households	17,137	59.8	20,827	60.2	26,127	61.4	31,004	62.2	35,231	63.0
TOTAL	Population	238,290		266,200		298,812		331,313		364,092	
	Households	107,201	45.0	123,598	46.4	145,857	48.8	165,655	50.0	185,353	50.9

TABLE 3

POPULATION AND HOUSEHOLD PROJECTIONS - REGION OF WATERLOO

1981-2001-1980 CONSTANT*

ALTERNATIVE 3

Age of Household Head		1981		1986		1991		1996		2001	
		No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,013		54,141		56,061		59,998	
	Households	8,748	15.7	8,637	15.7	8,500	15.7	8,802	15.7	9,420	15.7
25 - 34	Population	58,687		62,812		66,121		67,595		66,729	
	Households	29,226	49.8	31,280	49.8	32,928	49.8	33,662	49.3	33,231	49.8
35 - 44	Population	38,633		51,389		64,981		71,350		74,641	
	Households	21,055	54.5	28,007	54.5	35,415	54.5	38,886	54.5	40,679	54.5
45 - 54	Population	31,066		32,958		40,287		53,597		66,927	
	Households	16,620	53.5	17,633	53.5	21,553	53.5	28,674	53.5	35,806	53.5
55 - 64	Population	25,526		29,430		30,724		32,865		39,874	
	Households	14,805	58.0	17,069	58.0	17,820	58.0	19,062	58.0	23,127	58.0
Over 65	Population	28,657		34,597		42,558		49,845		55,923	
	Households	17,137	59.8	20,689	59.8	25,447	59.8	29,807	59.8	33,442	59.8
TOTAL	Population	238,290		266,200		298,812		331,313		364,092	
	Households	107,591	45.0	123,315	46.3	141,663	47.4	158,893	48.0	175,705	48.3

* Source: The probability of Household Formation Assumptions were derived from the 1980 Assessment File.

** Source: Population by age cohort is based on the 1980 Regional Population Forecast (Regional PD 22/80 and PD 130/81).

TABLE 4

POPULATION AND HOUSEHOLD PROJECTIONS REGION OF WATERLOO

1981-2001 C.M.H.C. Ontario Projection *

ALTERNATIVE 4

Age of Household Head		1981		1986		1991		1996		2001	
		No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,013		54,141		56,061		59,998	
	Households	7,801	14.0	8,967	16.3	9,637	17.8	10,427	18.6	11,100	18.5
25 - 34	Population	58,687		62,812		66,121		67,595		66,729	
	Households	30,282	51.6	32,097	51.1	34,912	52.8	36,636	54.2	36,234	54.3
35 - 44	Population	38,633		51,389		64,981		71,350		74,641	
	Households	21,055	54.5	27,699	53.9	35,415	54.5	39,670	55.6	41,799	56.0
45 - 54	Population	31,066		32,958		40,287		53,597		66,927	
	Households	16,154	52.0	18,094	54.9	22,238	55.2	29,639	85.3	36,743	54.9
55 - 64	Population	25,526		29,430		30,724		32,865		39,874	
	Households	14,473	56.7	17,011	57.8	18,066	58.8	19,292	58.7	23,326	58.5
Over 65	Population	28,657		34,597		42,558		49,845		55,923	
	Households	17,252	60.2	21,831	63.1	27,407	64.4	32,300	64.8	36,238	64.8
TOTAL	Population	238,290		266,200		298,812		331,313		364,092	
	Households	107,017	44.9	125,699	47.2	147,675	49.2	167,964	50.7	185,440	50.9

* Source: The Probability of Household Formation was derived from a Central Mortgage and Housing Corporation Forecast of Housing Requirements (1981) for Ontario

** Source: Population by age cohort is based on the 1980 Regional Population Forecast PD 22/80 and PD 130/81.

TABLE 5

POPULATION AND HOUSEHOLD PROJECTIONS, REGION OF WATERLOO

1981-2001 C.H.H.C.'S KITCHENER C.M.A.*

ALTERNATIVE 5

Age of Household Head		1981		1986		1991		1996		2001	
		No.	%	No.	%	No.	%	No.	%	No.	%
15 - 24	Population	55,721		55,013		54,141		56,061		59,998	
	Households	11,534	20.7	12,543	22.8	13,048	24.1	14,127	25.2	15,539	25.9
25 - 34	Population	58,687		62,812		66,121		67,595		66,729	
	Households	29,989	51.1	33,290	53.0	36,300	54.9	38,259	56.6	38,436	57.6
35 - 44	Population	38,633		51,389		64,981		71,350		74,641	
	Households	21,055	54.5	28,007	54.5	35,804	55.1	39,813	55.8	42,247	56.6
45 - 54	Population	31,066		32,958		40,287		53,597		66,927	
	Households	16,838	54.2	18,127	55.0	22,158	55.0	29,157	54.4	36,341	54.3
55 - 64	Population	25,526		29,430		30,724		32,865		39,874	
	Households	14,575	57.1	17,069	58.0	18,096	58.9	19,522	59.4	23,645	59.3
Over 65	Population	28,657		34,597		42,558		49,845		55,923	
	Households	17,653	61.6	22,038	63.7	27,407	64.4	32,300	64.8	36,238	64.8
TOTAL	** Population	238,290		266,200		298,812		331,313		364,092	
	Households	111,644	46.9	131,074	49.2	152,813	51.1	173,178	52.3	192,446	52.9

* Source: The probability of household formation was derived from a Central Mortgage and Housing Corporation Forecast of Housing Requirements (1981) for the Kitchener Census Metropolitan Area.

** Source: Population by age cohort is based on the 1980 Regional Population Forecast (Regional PD 22/80 and PD 130/81).